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ABSTRACT

There is a widespread, firm belief among Native American communities (American Indians, Alaska Natives, Native Hawaiians) and among professional Native educators that meaningful educational experiences require an appropriate language and cultural context. From their perspective, such context supports the traditions, knowledge, and language(s) of the community as a starting place for learning new knowledge. This review collects, reports on, and critically analyzes the research literature to determine whether a culturally based education (CBE) curriculum improves the school performance of American Indian, Alaska Native, and Native Hawaiian students. Introductory sections discuss events of the past three decades supporting development of CBE, three theories underlying CBE interventions, an operational definition of the elements of CBE, definitions of experimental and quasi-experimental research, and the difficulties in conducting such research. The review found only four studies that could legitimately be classified as experimental or quasi-experimental. Because of these limited numbers, a small number of non-experimental comparative studies were added. Only one research project was found that provides insights on how researchers might show a direct connection between CBE and improved academic performance. Recommendations are presented for improving the research base on CBE for Native Americans. Data tables summarize the studies examined. Appendices describe the resources used in the literature search and present a lengthy annotated bibliography. (Contains 41 references.) (SV)

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Final Paper

A REVIEW OF THE RESEARCH LITERATURE ON THE INFLUENCES OF CULTURALLY BASED EDUCATION ON THE ACADEMIC PERFORMANCE OF NATIVE AMERICAN STUDENTS

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February 10, 2003

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TABLE OF CONTENTS

Preface and Acknowledgments iii

Foreword iv

Introduction 1

Overview of the Literature Search on Culturally Based Education Programs 6

  Definitions of Culturally Based Education Interventions 7

  Definitions of Experimental and Quasi-Experimental Research 9

  Difficulties in Implementing Experimental and Quasi-Experimental Research.. 10

Experimental or Quasi-Experimental Studies 12

  The Effective Instruction of Comprehension: Results and Description of the Kamehameha Early Education Program 12

  Guided Affective and Cognitive Imagery to Enhance Self-Esteem Among Hawaiian Children 16

  Effects of a Computer-Assisted Instruction Program on Aboriginal Student Achievement 17

  Art Activities to Improve Self-Esteem Among Native Hawaiian Children 17

  Improving Alaska Native Rural and Urban Students' Mathematical Understanding of Perimeter and Area 18

  Families and Schools Together: An Experimental Analysis of a Parent-mediated Early Intervention Program for At-risk American Indian Children 19

  Discussion 20

Non-Experimental Comparative Studies 23

TABLE OF CONTENTS (Continued)

Creole and English as Languages of Instruction in Bilingual Education With Aboriginal Australian: Some Research Findings....23

Alaska Rural Systemic Initiative: Year Three Annual Progress Report....24

The Effectiveness of Bilingual Instruction With Cherokee Indian Students....24

Using the Gap Reduction Model to Evaluate a Successful Bilingual/ESL Program....25

The Rock Point Experience: A Longitudinal Study of a Navajo School Program....26

Subtractive Bilingualism and the Survival of the Inuit Language: Heritage Versus Second-Language Education....27

Adding Cognition to the Formula for Culturally Relevant Instruction in Mathematics....28

Bilingual Education in San Juan County, Utah: A Cross Cultural Emphasis....29

Discussion....30

Improving the Research Base on Culturally Based Education For Native Americans....34

Observations on the Quantitative Research on Bilingual Education: An Annotated Bibliography....38

Concluding Remarks....40

Bibliography....47

Appendix I: Resources Utilized in the Literature Search....51

Appendix II: Annotated Bibliography of the Research Literature on Culturally Based Education (CBE) Programs Serving Native American Students....58

Preface and Acknowledgments

This review of the research literature on the influences of culturally based education (CBE) on the academic performance of Native American students focuses on the quantitative and select qualitative research identified through a number of sources, including: 1) the ERIC Clearinghouse on Rural Education and Small Schools (ERIC/CRESS); 2) Digital Dissertations, DIALOG, ProQuest, and Info&Learning; 3) a variety of other resources and select individuals (e.g., Center for Applied Linguistics; Center for Research on Education, Diversity, and Excellence (CREDE); the effective schooling research from the Northwest Regional Education Laboratory (NWREL); Cambridge Scientific Abstracts; 4) Anthropological Abstracts, Psychological Abstracts, Social Sciences Index, Sociological Abstracts; and 5) reports on bilingual programs that include non-Native students.[1]

Special thanks must go to Patricia Cahape Hammer of ERIC/CRESS for her personal attention to ensure that a wide variety of sources were covered in the search. In addition, special thanks to Western Washington University students Renee Barut and Kelly Smith for their work in tracking down and accessing articles selected to be used in this study. Kelly must also be recognized for the excellent work she did in reviewing and reporting information on the different reports on bilingual education included in this document. Recognition must also be expressed for the significant support given by Roland Tharp in reviewing the document and providing a detailed description of the methodology, expectations, and results of the KEEP study conducted under his direction.

This review of the literature uses footnotes at the bottom of each page. The citations are a combination of reports of research on Native American, as well as non-Indian or other groups and a number of secondary sources such as literature reviews. A separate bibliography is included at the end of this document. Appendix II includes an updated annotated bibliography originally published in ERIC (Demmert, 2001), and expanded for a RAND Study (Demmert & Towner, 2002).

The availability of quantitative research literature on culturally based education programs for Native American children is severely limited. Possible experimental or quasi-experimental research models appropriate for a national quasi-experimental and/or experimental study of Native education are also in short supply. In spite of these shortcomings, this report does provide suggestions, with the addition of a select number of qualitative studies, on what might be possible, what would be necessary, and what might not be appropriate to use in a search for research models appropriate for a national study of Native education.

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[1] See Appendix I for a complete listing of descriptors and search sources used.

Foreword

A partnership has been formed to work on this project that includes the Northwest Regional Educational Laboratory, a leading institution in the field of school reform and the effective schooling movement; the Center for Research on Education, Diversity, and Excellence, with Roland Tharp as the director, and member researchers and institutions that excel in their individual fields; and David Grissmer, from the RAND Corporation, recognized for excellent work in educational research and in other fields.

In addition to partnering with well-established research institutions, the coalition includes Native American organizations as well as Native professionals and non-Native professionals who have extensive experience in working with Native people. The National Congress of American Indians, the National Indian Education Association, and the National Indian School Boards Association are all partners in this endeavor. Their collective support and cooperation are critical if a national study of Indian education is to be planned and implemented. Individual researchers who are members of this coalition include Professor David Beaulieu, University of Wisconsin-Milwaukee; Professor John Tippeconnic, Pennsylvania State University; Joseph Trimble, Professor, Western Washington University; Professor Karen Swisher, President of Haskell Indian Nations University; Professor Rick St. Germaine, University of Wisconsin, Eau Claire; Professor Gerald Mohatt, University of Alaska, Fairbanks; and William Demmert, Professor of Education, Western Washington University.

An internal review panel will monitor the information, progress, and process used in developing this report. This group includes Joseph Trimble, Ph.D., Western Washington University; Karen Swisher, Ph.D., Haskell Indian Nations University; and John Tippeconnic, Pennsylvania State University.

An external review committee to monitor progress and quality includes Diane August, Center for Applied Linguistics; David Grissmer, RAND Corporation; and Lee Sechrest, University of Arizona.

Introduction

One of the major tasks facing Native American communities (American Indians, Alaska Natives, and Native Hawaiians) is to create lifelong learning opportunities that allow all the members to improve their quality of life, and to meet their tribal responsibilities through meaningful contributions to the local, national, and world communities in which they live and interact. The greatest educational challenge for many is to build learning environments that allow each of their young children to obtain an education that "creates good people that are knowledgeable and wise."[2]

From a tribal and Native American professional perspective, the creation of lifelong learning environments and meaningful educational experiences for both the youth and adults of a tribal community requires a language and cultural context that supports the traditions, knowledge, and language(s) of the community as the starting place for learning new ideas and knowledge. There is a firm belief within many Native tribal communities and professional Native educators that this cultural context is absolutely essential if one is to succeed academically and to build a meaningful life as adults.[3] (Opposition to this point of view from tribes or Native educators is not in evidence in the printed literature we reviewed.) It also means that all members of indigenous communities must be prepared to participate fully in today's technical environment.

Certain events in 1969 and the early 1970s set the stage for the development of new interests, attitudes, and programs concerning the education of American Indians. These events included the following: 1) release of the Senate Subcommittee Report, *Indian Education: A National Tragedy, A National Challenge*;[4] 2) the first national conference on Indian education;[5] 3) the Havighurst Report;[6] 4) the First Convocation of American

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[2] At the National Indian Education Association convention held in Albuquerque, New Mexico, November 2–6, 2002, Vine Deloria presented the purpose of education from his research on early reports of Indian education as "creating good people." We have added "that are knowledgeable and wise" to present a broader perspective.

[3] *Indian nations at risk: An educational strategy for action* (1991). Final Report of the Indian Nations At Risk Task Force, U.S. Department of Education. And, *The final report of the White House Conference on Indian Education*, (1992), Vols. 1 & 2. Washington, DC: U.S. Government Printing Office.

[4] U.S. Senate. *Indian education: A national tragedy–A national challenge.* (1969). Special Subcommittee on Indian Education of the Committee on Labor and Public Welfare, Senate Report No. 91-501. Washington, DC: U.S. Government Printing Office.

[5] Rosemary Christensen, with support from the Minnesota Indian Education Committee, and the Upper Midwest Regional Educational Laboratory, and a select number of key individuals in Minnesota, organized the first national conference on Indian education in the fall of 1969. The second national conference was also organized by Rosemary Christensen; it was sponsored by the National Indian Education Association, created in 1970.

[6] Havighurst, Robert J. (1970). The education of Indian children and youth. *The national study of American Indian education, Summary report and recommendations*. USCE OEO-0-8-080147-2805, Series IV, No. 6. Chicago, IL: University of Chicago Press, 1970.

Indian Scholars held at Princeton University in March, 1970;[7] and 5) the creation of the National Indian Education Association.[8]

The U.S. Senate Subcommittee Report, *Indian Education: A National Tragedy, A National Challenge,* presented information on decades of programs, attitudes, and federal policy that had stripped the American Indian of dignity. It referred to an earlier national study by Lewis Meriam and his colleagues that presented some initial and early perspectives about the place of language and culture in the education of American Indians. The "Meriam Report" recommended the incorporation of tribal language and cultural programs in the school curriculum, Native teachers to teach in schools serving Native students, and early childhood programs that would provide a safe and challenging early environment for young Indian children. Meriam presented the thesis that incorporating "Culture Based Education" (CBE) was a necessary component of a school's culture if Native American students were to succeed academically as students and play a meaningful role as citizens.[9]

The first national conference on Indian education, held in Minneapolis, Minnesota, and organized by Rosemary Christensen, in partnership with the Upper Midwest Regional Educational Laboratory (UMREL) and the Minnesota Indian Education Committee (MIEC), along with a number of individuals including Elgie Raymond, Jerry Buckanaga, Don Bibeau, Ted Mahto, Bill Ammentorp, and Don Christensen, promoted the emergence of modern national leadership in the field of Indian education. This first national conference, followed in 1970 by conferences sponsored by the National Indian Education Association, offered a national forum for a contemporary discourse on the education of American Indians regarding federal and state policies, programs, the need for more Native teachers, local control of schools, curriculum needs, and other priorities.[10]

The Havighurst Report provided some insightful research on the academic performance of Indian and Alaskan Native children, with an analysis of strengths and weaknesses influenced by different learning and physical environments. It also discussed the lack of Native teachers, the lack of a curriculum that supported the language and cultural base of the Native community served, and federal policies and practices that had caused a loss of dignity and ability for many to adjust to the demands of modern society, in part as a failure of schools.[11]

The First Convocation of American Indian Scholars, held at Princeton University in March 1970, was organized under the auspices of the Indian Historian, a California publishing venture organized by Rupert Costo and Jenette Henry. They were supported in their planning by two university faculty members: Scott Momoday, a professor at Stanford University at the time; and Alfonso Ortiz, a professor at Princeton University. The convocation was funded by the Ford Foundation and brought a mix of Indian educators (with a master's or doctorate degree) together, including Indian language experts, Indian artists, and tribal historians. The purposes of this convocation were to discuss issues of tribal rights with a concentration on water rights of western tribes, the place of the arts in Indian society and intellectual property rights, and ways to improve educational opportunities for Indian children. The education discussion centered on the lack of Native teachers, Native culture, language, and other learning priorities. Rosemary Christensen, Marigold Linton, Sparland Norwood, Hershel Sahmaunt, John Winchester, Elizabeth Whiteman, and William Demmert, along with a few others, discussed the idea of creating a national Indian education association. Rosemary Christensen was selected to incorporate the organization in Minnesota.

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[7] *Indian Voices, The First Convocation of American Indian Scholars.* (1970). San Francisco, CA: The Indian Historian Press, Inc., American Indian Education Publishers.

[8] The National Indian Education Association was conceived as an idea during the First Convocation of American Indian Scholars, and chartered in the state of Minnesota in the summer of 1970.

[9] Meriam, Lewis, et al. (1928). *The problem of Indian administration.* Baltimore, MD: Johns Hopkins University Press.

[10] As presented by Rosemary Christensen (footnote 4).

[11] See Havighurst.

The creation of the National Indian Education Association turned out to be timely for a number of reasons. It provided a long-term sponsor for expanding a national discourse about programs and policies that would concentrate on improving the quality of schools and schooling for Native American students. Increasing the number of Indian teachers, strengthening the language and cultural priorities of Indian tribes, and supporting changes in the curriculum of schools serving Native students all became major priorities. The single most important role that the NIEA engaged itself in early in its history was in providing leadership and support for developing and implementing the Indian Education Act of 1972. Will Antell (president of NIEA at the time) and William Demmert (a graduate student at Harvard during this period, a founder and member of the Board of NIEA) were engaged by the U.S. Senate (Senators Walter Mondale and Ted Kennedy) to work on the Indian Education Act of 1972. William Demmert later became the first Deputy Commissioner of Indian Education, in the U.S. Department of Health, Education, and Welfare, U.S. Office of Education, and Will Antell became the first chairman of the presidentially appointed National Advisory Council for Indian Education (NACIE). Both positions were created under this new legislation.[12]

The Indian Education Act of 1972 (P.L. 92-318 as amended) became the major force for implementing new ideas generated from the emerging national discourse on ways to improve schools and schooling for Native American students. Priorities in the legislation included: 1) funding for schools to develop culturally based curriculum; 2) support for increasing the numbers of Native teachers and other professionals (an amendment added in 1973); 3) opportunities to develop Native language and cultural programs; and 4) a requirement for active, meaningful parental participation. The new legislation also allowed for building demonstration programs and for the experimentation of new ideas for educating Native children.[13]

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[12] Author's personal knowledge.

[13] Demmert, W.G., Jr. (1996). Indian nations at risk: An educational strategy for action. *Educating a new majority, Transforming America's educational system for diversity,* edited by Laura I. Rendon, Richard O. Hope, and Associates. San Francisco, CA: Jossey-Bass.

The current national Native American interest in promoting Native language development and cultural priorities important to continuing one's Native or tribal identity is a cumulative result of the events listed above. Many Native American groups and educators take the position that recognizing one's Native American (American Indian, Alaska Native, or Native Hawaiian) heritage is necessary to an individual's mental, spiritual, and physical health. Opposition to this position has decreased during the past 20 years as evidenced by the White House Conference on Indian Education and the Indian Nations At Risk report where the preponderance of recommendations indicates growing support.[14] Earlier attitudes about language and culturally based programs are reflected in the fact that such programs did not exist, or were very limited in number before the Indian Education Act of 1972.

The culturally based education (CBE) priority of Native people has been reinforced in recent years through several events: 1) *Indian Nations At Risk: An Educational Strategy for Action,*[15] 2) the White House Conference on Indian Education,[16] 3) the Native American Languages Act of 1990,[17] and 4) the Executive Order of August 1998 on Indian Education.[18] The interest in finding a relationship between improved academic performance and programs that include culturally based education activities (e.g., language and cultural programs), is the result of a firm belief within the Native American professional community that high achievement in academics and motivation depend on the spiritual well-being of Native students, early attention to cognitive development, sense of identity, and social/cultural maturity. The purpose of an experimental study would be to determine *whether* CBE activities have this effect, and if so, how large the effect is. This belief incorporates the position that improved academic performance will not occur until other factors identified above are included as part of a comprehensive approach for nurturing and educating the whole child.[19]

In direct support of the growing Native American position on the influence of culture in a person's life, Jerome Bruner (a foremost pioneer in cognitive development and educational psychology) states that "…culture shapes mind, …it provides us with the tool kit by which we construct not only our worlds but our very conceptions of our selves and our powers." He further states that "…you cannot understand mental activity unless you take into account the cultural setting and its resources, the very things that give mind its shape and scope. Learning, remembering, talking, imagining: all of them are made possible by participating in a culture." [20] The quantitative research available on Native

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[14] See *Indian nations at risk: An educational strategy for action, and the White House Conference on Indian Education.*

[15] *Indian nations at risk: An educational strategy for action.* (1991). Final Report of the Indian Nations At Risk Task Force. Washington, DC: U.S. Department of Education.

[16] White House Conference on Indian Education. (1992). *The final report of the White House Conference on Indian Education (Executive Summary).* Washington, DC: Author. (ERIC Document Reproduction Service No. ED353124)

[17] Native American Languages Act 1990.

[18] Executive Order, American Indian and Alaska Native Education, August 6, 1998.

[19] See *Indian Nations at risk: An educational strategy for action,* and the White House Conference on Indian Education.

[20] Bruner, J. (1996). *The culture of education.* Cambridge, MA, & London, England: Harvard University Press, pages x–xi.

Americans is not sufficient to transfer this theory to Native America but the qualitative research provides some interesting insights to this position and is very supportive.

The formal reports cited in this review of the literature present the position that knowing, understanding, and appreciating one's cultural base are necessary starting points for initiating a young child's formal education. The theory is that it sets the stage for what occurs in a youngster's later life. The task of this report is to review the research literature to determine whether there is a direct relationship between a culturally based education curriculum and improved academic performance among Native American students. There is a significant amount of qualitative research that sets the stage for testing ideas through quantitative methods that may isolate specific factors that validate theories regarding culturally based education in searching for ways to improve academic performance among Native children.[21] Let us hope that the quality of future research and the combined knowledge of the Native American Research Consortium, partners, and other researchers in the field of Native education can accomplish this.

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[21] Demmert, W.G., & Towner, J.C. (2002). *Improving academic performance among Native American students, a review and analysis of the research literature.* (Unpublished report submitted to RAND as part of a larger report on National Assessment of Educational Progress regarding Indians.)

Overview of the Literature Search on Culturally Based Education Programs

The purpose of this review of the literature was to collect, report on, and critically analyze the research literature on the impact of culturally based education programs, known collectively as Culturally Based Education, on the school performance of American Indian, Alaska Native, and Native Hawaiian children. As directed, the review includes studies that can legitimately be classified as experimental or quasi-experimental. Because of the limited numbers in this classification, a small number of non-experimental comparative studies were added. Our approach was to begin with a recent review of the literature on Native American education, conducted by Demmert, that included more than 100 citations,[22] and to identify studies in that review that were either experimental or quasi-experimental, and that were pertinent to the question of the effectiveness of culturally based education.

We then initiated an expanded search for additional and new studies meeting pre-determined criteria established in this report for quasi-experimental or experimental studies, with a limited number of non-experimental studies. That search included the following: 1) the ERIC Clearinghouse on Rural Education and Small Schools (ERIC/CRESS); 2) Digital Dissertations, DIALOG, ProQuest, and Info&Learning; 3) a variety of other resources and select individuals (e.g., Center for Applied Linguistics, Office of Educational Research and Improvement (OERI); Center for Research on Education, Diversity, and Excellence (CREDE); the effective schooling research from the Northwest Regional Education Laboratory (NWREL); Cambridge Scientific Abstracts; Wilson Social Sciences Index; and other reports on bilingual education;
4) Anthropological Abstracts, Psychological Abstracts, Social Sciences Index, Sociological Abstracts; and 5) reports on bilingual programs that include non-Native students.[23]

In the first review of the literature presented earlier, we discovered that nearly all of the research consisted of qualitative case studies and simple descriptions. Of all the studies reviewed, only four studies targeting culturally based education could be considered experimental or quasi-experimental, and only one speaks directly to the culturally based education/academic achievement link. This review included bilingual and bicultural programs serving Native communities as part of the definition of culturally based education. The subsequent search yielded no additional studies on culturally based education that could be considered experimental or quasi-experimental. Because of this finding, we added non-experimental research projects that compared groups in order to provide a broader view of the current research findings. Obviously, there is a strong need to design and implement research studies that will yield valid and reliable information about the impact of culturally based education programs on student achievement.[24] Understanding the feasibility of such studies can be advanced by examining the conditions necessary for achieving it.

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[22] See http://www.ael.org/eric/demmert.pdf

[23] See Appendix I for a complete listing of sources and descriptors utilized.

Definitions of Culturally Based Education Interventions

There are three major theories underlying culturally based education (CBE) interventions. These are Cultural Compatibility Theory, Cognitive Theory, and Cultural-Historical-Activity Theory (CHAT). Most, if not all of the research information gathered from the literature search is expressed in language that explicitly or implicitly positions the study into one of these orientations. No major alternative or additional theory has emerged from the review.

Cultural compatibility is the most frequently encountered framework for presenting studies of CBE. It is, however, a simple descriptive framework, in contrast to cognitive theory and CHAT, each of which contains sets of accepted principles with wide connections to other phenomena, disciplines, and domains of inquiry. The basic proposition of cultural compatibility theory is that education is more efficacious when there is an increase in congruence between social cultural dispositions of students and social cultural expectations of the school.

In point of fact, the three major theoretical approaches to CBE interventions, Cultural Compatibility, Cognitive Theory, and Cultural-Historical-Activity Theory can well be considered as increasingly elaborate iterations of that concept of congruence. Tharp and his associates,[25] for example, began their work with a cultural compatibility explanation, but steadily refined their theoretical analyses to a CHAT foundation, and more recently have begun to discuss compatibilities through concepts drawn from Cognitive Theory. But what is the nature of this congruence?

> . . . learning may be defined as associating new information with prior knowledge (Baddeley, 1990; Lockhart & Craik, 1990).[26] For learning to occur, relevant prior knowledge in long-term memory must be activated, or made accessible, *and* the new information must undergo some form of processing. Processing that focuses on conceptual characteristics of the new information, such as its meaning, personal and social relevance, or relationship to prior knowledge and experience, improves learning and recall. Also, the greater the number of associations made between the new and the known, the more likely the new material will be retained

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[24] See Demmert & Towner (2002).

[25] Tharp, R.G., Estrada, P., Dalton, S.S., & Yamauchi, L.A. (2000). *Teaching transformed: Achieving excellence, fairness, inclusion and harmony*. Boulder, CO: Westview Press; Tharp, R.G., & Gillmore, R. (1989). *Rousing minds to life: Teaching and learning in social context*. New York, NY: Cambridge University Press.

[26] Baddeley, A.D. (1990). *Human memory: Theory and practice*. Boston, MA: Allyn & Bacon; Lockhart, R.S., & Craik, F.I.M. (1990). Levels of processing: A retrospective commentary on framework for memory research. *Canadian Journal of Psychology, 44*, 87–122.

> and recalled (Baddeley, 1990; Lockhart & Craik, 1990).[27] As Howes (1990) states, an extended body of elaborated, meaningful material is more easily encoded and retrieved than an extended body of unrelated elements.[28]

However, cognitive theorists who have worked in education (e.g., Bruer, 1993) make no distinction between types or sources of knowledge *per se*, and so might find "teen culture" elements, introduced to assist comprehension of curriculum, to be as efficacious as traditional culture elements.[29]

Only at this point does CHAT diverge from cognitive theory. CHAT is primarily a theory of development. Cultural activities among members, primarily through semiotic processes, create in learners internalizations of knowledge, values, and cognitive routines. Because culture (and its accompanying psychology) is created through historical time spans and processes, traditional culture is more likely to contain "an extended body of elaborated, meaningful material." Therefore CHAT places more emphasis on community-level elements for connectivity, thereby multiplying the richness of potential associations between student experience and the academic curriculum. Thus, a CBE that is congruent with community goals is hypothesized as maximally efficacious for student academic achievement.

But all three theories presumably would agree that the basis of education is best built on the experience, values, and knowledge of the students and their families, both personal and community-based.[30]

Our original plan was to examine the literature related to each of these theories to determine the extent to which any or all had been validated by objective research. What we found in our broad review of literature was that there was no clear link to any one of these three theories (except for the KEEP work, which used two). At this point, it is our sense that the theories, while sharply different in scope and complexity of development, do not offer any substantial differences in prediction or program design relevant to CBE. Rather than pitting one theory against another, it would be more productive for researchers to consider all three theories as underlying explanatory mechanisms for culturally based education interventions.

Operationally, we defined culturally based education programs as having six critical elements:

1. Recognition and use of Native American (American Indian, Alaska Native, Native Hawaiian) languages.

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[27] See Baddeley (1990) and Lockhart & Craik (1990).

[28] Howes, M.B. (1990). *The psychology of human cognition.* New York, NY: Pergamon Press; Doherty, W.R., Hilberg, R.S., Pinal, A., & Tharp, R.G. (In press). Transformed pedagogy, organization, and student achievement, *Journal of Bilingual Research.*

[29] Bruer, J.T. (1993). *Schools for thought: A science of learning in the classroom.* Cambridge, MA: MIT Press.

[30] See Technical Proposal submitted for this contract.

2. Pedagogy that stresses traditional cultural characteristics, and adult-child interactions.

3. Pedagogy in which teaching strategies are congruent with the traditional culture and ways of knowing and learning.

4. Curriculum that is based on traditional culture and that recognizes the importance of Native spirituality.

5. Strong Native community participation (including parents, elders, other community resources) in educating children and in the planning and operation of school activities.

6. Knowledge and use of the social and political mores of the community.

Our conceptual approach to identifying relevant research was to identify studies that included some or all of the above defining elements as part of the treatment and employed either an experimental or quasi-experimental methodology.

Definitions of Experimental and Quasi-Experimental Research

The terms *experimental* and *quasi-experimental* research are often interpreted differently in professional literature. For our purposes, we defined experimental research studies as characterized by 1) driving questions of causation and 2) the random assignment of subjects/individuals/units to treatment conditions by the researcher(s). This implies at least two treatment conditions (e.g., experimental and control) that can be set up in various randomized designs. Experimental research is the preferred approach when questions of cause-and-effect are at issue. The strength of these designs lies in the random formation of comparison groups. Given reasonable sample sizes, randomization balances groups on all relevant variables so that at the outset of the study, groups differ only on chance factors. Groups that are not randomly formed may well differ on any number of variables, known and unknown, all or any of which can confound the interpretation. Quasi-experimental research studies also focus on questions of causation and are those in which the researcher has some control of assignment of subjects to treatments, but for some reason can only work with intact groups. For example, a study in which a researcher assigns one classroom to condition A and one classroom to condition B would be classified as quasi-experimental. There are a number of quasi-experimental designs including the non-equivalent control group design, time series designs, and counterbalanced designs. Usually, attempts to gain some control on initial group differences are done through matching or statistical techniques. Even so, experimental research is better at ruling out competing explanations and, therefore, providing us with more reliable information regarding cause-and-effect questions.

Designs that are sometimes confused with quasi-experimental are commonly referred to as *causal-comparative* or *ex post facto*. These designs often attempt to address causal questions, but they are characterized by a lack of any control of who gets what and when.

Often, these designs have an "experimental" group and some "control" group, but the formation of these groups occurred outside the research context. For example, a comparison of programs where membership in the programs is on a volunteer basis or parent-request basis is appropriately labeled causal-comparative or ex post facto. In such cases, the researcher has no control regarding group formation. These designs are often strengthened with matching and/or statistical techniques. In general, these designs do not allow elimination of rival explanations and a limited number are included in this review.

Difficulties in Implementing Experimental and Quasi-Experimental Research

To arrive at reliable and valid findings about the effectiveness of educational interventions it is necessary to employ controlled research (i.e., experimental research). The implementation of this type of research in applied settings presents a number of challenges. This is particularly true for research aimed at determining the extent to which culturally based education programs affect school performance. Typically, researchers do not have the kind of control over the research setting necessary to conduct effective experimentation or quasi-experimentation. The problems associated with implementing experimental and quasi-experimental research are seen in our search of the literature, in which we found only four studies that can be legitimately classified as such, given our definitions of those types of research.

A number of the researchers reported in the annotated bibliography identified problems they encountered in attempting to do controlled research. Highlights of these problems are listed below in addition to other issues that, collectively, may serve to explain the low number of experimental and quasi-experimental research studies in our review.

The problem of time. In order for culturally based education to generate a detectable impact, a certain amount of time is required. The longer the time of the intervention, the more likely it is that it will have an effect. But, with increased time there is also an increase in the likelihood of experimental problems such as mortality, history, and maturation, acting differentially on the comparison groups. Likewise, increased time is probably associated with decreases in treatment fidelity.

The problem of ethics and group formation. Deciding to include some students in a potentially valuable educational program and exclude others for the purposes of research presents some ethical issues. One possible remedy is to run an experimental program in relatively short, repeating cycles so that all students can receive any potential benefit of the program. This alternative, of course, has its own set of problems from both an ethical and a research design perspective.

The problem of measurement. The problem of measurement is not limited to experimental and quasi-experimental research. Identifying valid and reliable measures of student achievement that are culturally appropriate (as opposed to bias-free which might not be possible to design) and sensitive enough to detect program impacts has been difficult for researchers. High-stakes measures may not be relevant to the intervention and have the additional problems of costs in terms of administration time and scoring. And, unfortunately, researcher-developed instruments often have low technical adequacy.

The Kamehameha Early Education Program (KEEP) group has also discussed the unusual conditions present in their context that allowed the unique experimental design. These issues are also crucial to consider in assessing the feasibility of future CBE experimentation, and we will return to this discussion later.

Experimental or Quasi-Experimental Studies

Study 1: Tharp, R. (1982). The effective instruction of comprehension: Results and description of the Kamehameha Early Education Program. *Reading Research Quarterly, 71*(4), 503–527.

Description. The Kamehameha Early Education Program (KEEP) was a reading program designed for young Hawaiian children, and adapted to meet their cultural needs and abilities. The program featured systematic, well-described instruction in reading comprehension, specifically developed for Polynesian-Hawaiian children with a high potential for school failure.

The initial program was designed according to generally accepted best practices (see discussion below under *Comment)*. Influenced by ongoing research, the program was changed to a reading-comprehension emphasis, and a culturally-based pedagogy.

Information gathered on the classes included direct observation of specific behavioral categories, detailed micro-ethnographic studies of sociolinguistic interactions in educational activity settings, ethnographic observations of teachers and students in all school activity settings, quality-control observations of teachers ensuring fidelity of program implementation, regular criterion-referenced student assessment, and student standardized achievement tests. Most KEEP teachers also participated as collaborating researchers on one or more substudies.

In addition, ethnographic qualitative studies were regularly conducted of students in informal settings at school (recess and before school, on buses, etc.), and at home.

The qualitative data enriched the understanding of family/community patterns of social organization and teaching/learning interactions, allowing the program designers to incorporate suitable culturally congruent elements into school instructional settings. Examples included the "talk story" Hawaiian culture sociolinguistic pattern, including overlapping speech turns and group co-narration; and Hawaiian culture patterns of task organization, "ohana," which involves joint productive activity with fluidity of specific role responsibilities. Talk story strongly affected the teacher-led small discussion groups in comprehension instruction; and ohana affected the classroom organization into multiple simultaneous group instructional activities, during which mutual assistance in task completion was characteristic.

The program was designed over a number of years, with modifications based on experimental studies testing the efficacy of various program elements, and "stream data" on student achievement on criterion-referenced tests as various program elements were modified and refined. When the program designers were confident that the best elements had been assembled, and that fidelity of implementation would be possible for the culture-based elements, the program was switched from its original decoding "best practices" emphasis to the new comprehension/culture-based emphasis.

The theoretical position of this article is that of cultural compatibility. Later discussions of the KEEP research by the author and his associates (e.g., Tharp & Gillimore, 1988), included cultural-historical-activity theory as the explanatory framework.[31]

Subjects. Initial KEEP research took place in an experimental school that included one class each of kindergarten through grade three. Efforts were made to maintain class size at 30. During the term of this experiment, three-fourths of the students were Hawaiian or part Hawaiian; one-fourth were a mix of Samoan, Japanese, Caucasian, Portuguese, Filipino, and Korean. The number of boys and girls were equally distributed, with one-fourth of the students from middle-class families and three-fourths from families receiving public assistance. Students were determined to be of normal intelligence (with mean WWPSI IQ's under Verbal = 90, Performance = 110, Total = 100) at the end of their kindergarten experience. Six successive classes did not differ significantly from one another in these features over the period of the study. Children were bi-dialectal, with Hawaiian Creole English as their first code and Standard English as the second. The families of all children for both the experimental and control groups were taken from the rolls of the state public assistance agency and were drawn at random. Both KEEP and control subjects were then required to volunteer, with a volunteer rate of less than 50 percent for both groups. End-of-year numbers of students for the KEEP classes averaged 28 students vs. 21 for classes in public schools.

The research reported in this paper was designed to answer three questions:

1. Is there a difference in effectiveness between the traditional and the CBE KEEP programs?

2. Is there a difference between the effects of the KEEP culture-based education and the forms of instruction typically used in public schools?

3. Can the KEEP culture-based laboratory school program be successfully exported to public schools?

Correspondingly, the research report included three experiments.

The first experiment was an analysis of differences between six successive cohorts of KEEP students (during which time the program changed). The authors recognize the limitations of successive-cohort design (due to potentially unrecognized sources of year-to-year variation) and submit that the design estimates plausibility, not probability.

The second experiment compared the KEEP-comprehension experimental groups with control subjects scattered in 24 classrooms in 11 local public schools. Direct observation of classroom practices allowed clear, contrastive descriptions of the KEEP vs. control classrooms.

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[31] Tharp, R.G., & Gallimore, R. (1982). Inquiry process in program development. *Journal of Community Psychology, 10*, 103–118; Tharp, R.G. (1981). The metamethodology of research and development. *Educational Perspectives, 20*(1), 42–48.

The third experiment was a true experimental design, in which the KEEP program was installed in two public schools. In each, first-grade students were randomly assigned to one of two classrooms (KEEP or Control). At one school, two KEEP-program teachers were volunteers, supported by KEEP trainer/consultants; at the other, the experimental classes were taught by experienced KEEP staff.

Data. In all three experiments, both experimental and control groups were administered end-of-year achievement tests (the Gates-MacGinitie and/or the Metropolitan Achievement Test); both tests provide their own national norms, standard scores, and percentiles. Tests were administered in small groups in the students' own schools.

Statistical Analyses.

Experiment One. The "old" and "new" KEEP programs differences were assessed using a successive-cohorts analysis, not appropriate for probability-based statistical analyses.

Experiment Two. An experimental vs. control design tested the superiority of the KEEP laboratory school program over public school control subjects. Means and standard errors of standard scores for KEEP and control groups for the Metropolitan Total and for the Gates-MacGinitie Reading Vocabulary and Comprehension subtests were subjected to analysis of variance, F tests for experimental vs. control factor, and omega squared for proportions of accounted variance.

Experiment Three. The same analyses were conducted as in Experiment Two.

Results.

Experiment One. Average Gates-MacGinitie percentiles for each cohort/year (15) were displayed. "Old Program" percentiles ranged from 13th to 23rd, "New Program" from 28th to 67th. Plausibility of attribution of these dramatic increases to program differences was assessed by logical dismissal of alternative explanations.

Experiment Two. KEEP program–instructed children scored better than the control groups with probability levels of the three test comparisons ranging from .001 to .003, and proportions of variance accounted for (omega squared) ranging from .077 to .145.

Experiment Three. Gates-MacGinnitie vocabulary and comprehension subtests, and Metropolitan Total were superior for KEEP over control classrooms. Probability levels of the three comparisons ranged from .016 to .064; omega squared statistics ranged from .012 to .023.

Comment. Given the similarity in results among the three experiments, the plausibility of Experiment One's validity is increased. The plausibility of Experiment One's attribution of differences to program effects is strengthened by the Experiment Two data describing classroom practices in the two groups. Major differences were in those features distinguishing the old and new KEEP programs.

Experiment Three's smaller differences attributable to KEEP program effects should give caution to scaling-up operators. In experiments One and Two, the KEEP teachers in the laboratory school were experienced, and under evaluation pressure for fidelity of implementation. In Experiment Three, half of the experimental classes were taught by temporary volunteers with only short-term training, some coaching, and little evaluation pressure. Though the experimental classes outperformed the controls in both sites, the effect sizes were much less than in Experiment Two. Scaling-up is no easy task, and requires teacher professional development and sustained motivation.

External evaluations of the KEEP program were carried out by the Ford Foundation (including site visit and examination of data) and Northwest Regional Education Laboratory, among others.

As a test of the model in a different locus and population, the KEEP program was extended into Rough Rock Elementary School (Navajo), Arizona.[32] The program took root, "naturalized" in the Navajo locale,[33] and became a Navajo-language early elementary program that has provided some post hoc evidence for its effectiveness.[34] While experimental-design evaluation was not possible in Rough Rock, the KEEP authors report that while the original KEEP elements were maintained in Rough Rock, the culturally-based implementation required major changes in social organization, sociolinguistic interaction patterns, and the nature of positive interpersonal reinforcement. Only with these changes was it possible to produce high student engagement. The authors submit this as inferential evidence for the potency of the KEEP culturally-compatible features.

The article reviewed here describes the KEEP program as containing six critical elements: 1) the active instruction of comprehension; 2) classroom organization in small groups; 3) active maintenance of student motivation through positive interpersonal reinforcement; 4) continuous monitoring and feeding-back of student performance data to teachers, professional development consultants/trainers, and program designers/operators; 5) individualized, diagnostic/prescriptive instruction; and 6) a quality control system ensuring fidelity of program implementation. The authors reported in detail the high quality of the program environment, including high on-task rates, full engagement by students, a sound academic curriculum, and a rich program of professional development for teachers and trainers. *Elements two through six were present in both the "old" and the "new" CBE programs.* The authors argue that these conditions are necessary but not sufficient elements for high student achievement. They attribute "new" program superiority to two critical differences in the programs: the introduction of the comprehension focus; and the introduction of culturally based organization of teacher-student interactions and culturally based peer interaction in the independent learning centers. In addition, the CBE program did not eliminate phonics instruction; one-third of instructional time continued to be devoted to the structural elements of reading.

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[32] Jordan, 1995; Vogt, Jordan, & Tharp, 1992.
[33] Sells, 1994.
[34] Dick, G.S., Estell, D.W., & McCarty, T.L. (1994); Begay, et al. (1995).

Implicit in the KEEP reports is the view that neither a high-standard academic curriculum, nor KEEP's six conditions, nor the culturally based implementation of the program are independently sufficient to produce high student achievement.

Furthermore, Tharp and Gallimore, in a series of meta-methodological articles,[35] argue that it is not possible to disentangle and partial-out the separate effects of the KEEP program elements. In the first place, they cannot be extracted one at a time, because each is interactive with the others. For example, the comprehension instruction was carried out using a CBE protocol based on Hawaiian talk story. In the second place, even if it were realistic to do so, the number of classrooms required to test differential effects would be impossible to manage with sufficient control and fidelity. Citing Cronbach's[36] classic study of aptitude-treatment interactions design, they maintain that this practical limitation on experimentation is not specific to KEEP, but is characteristic of all multi-component complex programs. While experimentation is appropriate to test an element's potential efficacy, once it is incorporated into a program, only the total program can be evaluated.

Thus, the CBE program added value to an already high-standard academic curriculum and school practices generally accepted as crucial to student achievement. It is important to note that the culturally based education hypothesis is not an alternative to a high-standard academic curriculum and program. Rather, CBE, in this case the KEEP program, offers an additional value-added condition—the delivery of a high-standard curriculum in a culturally based context.

This point is crucial to a determination of the feasibility of a national test of the CBE hypothesis.

The KEEP program is among the best-described educational programs in history, having generated hundreds of published articles and discussions. It is also probably the strongest evidence available for the efficacy of the culturally based education hypothesis. Nevertheless, the corpus of KEEP reports offers many cautions to educators considering CBE, particularly regarding "sufficiency" and "difficulty." CBE should not be understood as a sufficient condition for maximizing student achievement, in the absence of an otherwise sound educational program. And ensuring even medium-term fidelity of CBE/quality instruction takes time (years) and resources (money, expertise, and quality professional development) to achieve and maintain.

Study 2: Omizo, M.M., Omizo, S.A., & Kitaoka, S.K. (1998). Guided affective and cognitive imagery to enhance self-esteem among Hawaiian children. *Journal of Multicultural Counseling and Development, 26*(1), 52–62. (EJ567219)

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[35] See Tharp & Gilmore (1982); and Tharp (1981).

[36] Cronbach, L.J. (1975). Beyond the two disciplines of scientific psychology. *American Psychologist, 30*, 116–134.

Description. The purpose of this study was to investigate the effects of "guided affective and cognitive imagery" on the self-esteem of Hawaiian elementary school children. The study used an experimental design in which 60 children were randomly selected and then randomly assigned to treatment groups. The experimental group received 10 sessions of guided and cognitive imagery sessions over 12 weeks. The control group received no sessions. The dependent variable, self-esteem, was measured using the Culture-Free Self-Esteem Inventory (Battle, 1981). The authors report the reliability of this instrument to be in the high .80s and low .90s for elementary-age children. Concurrent validity (with the Coopersmith Inventory) was reported to range from .71 to .91. Using MANOVA and post hoc tests, the authors report finding a significant difference ($p < .01$) on two of the four subscales—general self-esteem and academic/school-related self-esteem.

Comment. Other than the fact that this study employed an experimental design and used Native Hawaiian children in the sample, it has little to say about the effects of culturally based education on school achievement. The treatment did not incorporate cultural elements and the dependent measure was not achievement (other than the natural influences of cultural practices carried out in each household). No information is provided about any relationship between the dependent measure and school achievement.

Study 3: Clark, W.J. (1996). *Effects of a computer assisted instruction program on Aboriginal student achievement.* Unpublished master's thesis, Brandon University, Manitoba, Canada. (ERIC Document Reproduction Service No. ED 400777)

Description. The purpose of this study was to investigate the effects of a computer-assisted writing instruction program (KnowledgeBuilder, 1992) on writing achievement of Native American children in grades seven to nine. The experimental group consisted of 49 junior high school students in intact classes in one school. The comparison group was 28 junior high school students in intact classes in another school. Both schools were located on Indian reservations in southwestern and south central Manitoba. Both groups were pretested in May 1994 and posttested in May 1995. Measuring instruments included the Canadian Test of Basic Skills and a provincial writing assessment using a "General Impressions Marking system." Data were analyzed using ANOVA. No significant differences were found between the two groups on the pretest or the posttest.

Comment. This quasi-experimental study tells us very little about culturally based education. Although the subjects were Native American children in reservation schools, the treatment (computer-assisted writing instruction) does not contain the defining elements of culturally based education. The findings of no difference are inconclusive given the basic design flaws including subject characteristics and confounding of treatment with schools and with classes.

Study 4: Omizo, M.M., & Omizo, S.A. (1989). Art activities to improve self-esteem among Native Hawaiian children. *Journal of Humanistic Education and Development, 27*(4), 167–175.

Description. The intent of this study was to examine the effectiveness of group counseling using art activities in improving the self-esteem of Hawaiian elementary children. The sample was 50 Native Hawaiian children, ages eight to 11, who were randomly assigned to one of two treatment conditions. The experimental group received 10 group counseling sessions (one per week) that focused on various art activities designed to improve self-esteem. For example, one session asked children to "… draw something they do well and share it with the group." The control group continued with their regular routines. The outcome variable, self-esteem, was measured using the Culture-Free Self-Esteem Inventory for Children (Form A, Battle, 1981). This instrument yields scores on four subscales: General Self-Esteem, Social/Peer-Related Self-Esteem, Academics/School-Related Self-Esteem, and Parent's/Home-Related Self-Esteem. It is a self-report written inventory with 60 items and is reported by these authors to have split-half reliabilities in the .80s and .90s. Concurrent validity is reported to be .71 to .91 using the Coopersmith Self-Esteem Inventory as a criterion. The authors report significant differences favoring the experimental group on two of the four scales—Social/Peer-Related Self-Esteem and Academic/School-Related Self-Esteem.

Comment. This study is identical in design to their 1998 study cited above. Although the population targeted Native children and employed an experimental design, the treatment has little connection to culturally based education. The outcome measure, self-esteem, was not shown to be linked in any way to academic achievement.

Study 5: Lipka, J., & Adams, B. (2002). *Improving Alaska Native rural and urban students' mathematical understanding of perimeter and area.* Unpublished manuscript. Alaska School Research Fund.

Description. The purpose of this quasi-experimental study was to determine the effectiveness of a culturally based unit of instruction on perimeter and area on student learning of these concepts at the sixth grade level. There were two independent variables examined in the study--treatment versus control condition and urban versus rural condition. Students from both the rural and urban settings were assigned to either the treatment or control group. Assignment of subjects to treatments was accomplished by randomly assigning teachers (and their intact classes) to one or the other condition. The total group was 97 percent Yup'ik population from one large urban school and four smaller rural schools. From this population four subgroups were created for the study. The four groups in the study consisted of five classes and 109 students in the Urban/Treatment group; three classes and 71 students in the Urban/Control group; four classes and 51 students in the Rural/Treatment group; and three classes and 27 students in the Rural/Control group. The outcome measure was a locally constructed achievement test on perimeter and area. The pretest and posttest versions consisted of 17 multiple choice or constructed response items. The pretest and posttest were included as appendices in the report.

For purposes of analysis, children's scores on the pretests and posttests were converted to percentages (i.e., percent correct). A series of *t* tests were conducted on the pretest scores and it was found that there were no differences between the treatment and control groups, across urban/rural, but there was a significant difference between urban and rural, across treatment/control, in favor of the urban group. Gain scores in percentages were used for the primary analysis. It was found that the percentage gain score for treatment, across rural and urban, was significant favoring the treatment group over the control; the percentage gain for urban-treatment group exceeded the percentage gain for the urban-control; the percentage gain for the rural-treatment group exceeded the percentage gain for the rural-control group; and the percentage gain for the urban-treatment group exceeded the percentage gain for the rural-treatment group. Finally, groups were compared on single test items of interest to the researchers. Conclusions were in favor of the effectiveness of the culturally based curriculum treatment as implemented in this study. The authors urge some caution in interpreting the results because of possible problems associated with treatment fidelity.

Comment. There are a number of strengths to this quasi-experimental study. First, the researchers were able to exercise some control of the formation of the comparison groups. Second, the mathematical concepts were constant between treatment and control groups. Third, the outcome measures had face validity. Fourth, culturally based approaches were built into the treatment condition in contrast to the control condition. Additional information about the details of the design of the treatment condition would have been useful. The results of the study need to be interpreted with caution because of a number of factors. As the authors point out, treatment fidelity is an unknown factor. The conversion of raw scores to percentage scores may have resulted in findings different from those based on an analysis of raw scores. Gain scores appear to have been used to compensate for the fact that there were significant differences between the urban and rural groups at the outset. A matching procedure of some sort might be preferred to the use of gain scores, which are typically less reliable than measures that are used for calculation of gain. Finally, if groups could be matched, a two-way analysis of variance on posttest raw scores would be preferred over multiple *t* tests.

Study 6: Kratochwill, T.R., McDonald, L., Young Bear-Tibbitts, H., & Levin, J.R. (2001). ***Families and schools together: An experimental analysis of a parent-mediated early intervention program for at-risk American Indian children.*** Final Report, OERI. Madison, WI: Wisconsin Center for Education Research.

Description. The purpose of this experimental study was to evaluate the adaptation of the FAST program in partnership with the Menominee Nation with regard to increasing academic performance of American Indian children in grades K–3 and to reduce classroom behavior problems correlated with school dropout. Subjects were 1,000 American Indian students from three schools that were paired and then randomly assigned to the FAST vs. the control condition. The treatment program, FAST, is designed to promote positive classroom behavior using a collaborative parent involvement program. Previous research documenting the promising effects of the FAST program was presented by the authors. Multiple outcome measures were used to evaluate the program, including measures of social performance and academic performance. Included in the academic performance were curriculum-based measures in reading and math. The rationale for all the measures was outlined in the report. Findings support the treatment and the FAST program appears to be adaptable to a variety of groups and cultural settings. No effects were found with regard to school achievement. The authors point out that the FAST program does not traditionally target school achievement and suggest that improvements in academic performance may lag behind improvements in social functioning.

Comment. Although this study does not evaluate an in-school culturally based education program, it does provide good evidence in support of some critical attributes of CBE. In particular "Strong Native community participation…in educating children and in the planning and operation of school activities; and, knowledge and use of social and political mores of the community" (attributes 5 and 6, p. 9 of this document). The evidence presented is convincing that there is at least a moderate effect of a systematic home-school program such as FAST on the social behavior of young American Indian children. The link between these social behaviors and academic performance was not demonstrated in this study, however.

Even though this study does not directly address CBE, it is important to consider for a number of reasons. First, it directly addresses some of the underlying defining attributes of CBE programs and provides validating evidence. Second, it provides an example of a strong research design. Third, it is a good example of grounding the development of an intervention in previous research and theory. And fourth, it uses and provides a rationale for a number of promising outcome measures, including *curriculum-based measures* in reading and math to assess academic performance with young children.

Discussion

The above studies were selected based upon our initial two criteria: the studies had to be experimental or quasi-experimental in design, and they had to address the education of Native American children, preferably with a program of culturally based or culturally relevant curriculum. All four of the studies reviewed above met the design criterion. However, we are less confident that they clearly and directly met the second criterion. While Tharp's (1982) study focused as much on other methods of teaching as it did on culturally based education, the treatment was designed with cultural relevance in mind, and the major dimension of difference, between the compared treatments, was a reading methodology related to a current cultural form of sociolinguistic interaction. The study by Clark (1996) used Native American children, but the treatment—a computer assisted instruction program for teaching writing—was not designed to target cultural relevance. The two studies by Omizo and colleagues, (1989, 1998) also used Native children (Hawaiian), but the counseling treatments were not particularly designed to be culturally targeted and the connection between their outcome variable and student achievement was not addressed. The study by Lipka and Adams (2002) was one of the studies that was most on target for us. It clearly addressed the application of culturally-based pedagogy and it met the design criteria for inclusion, i.e., experimental or quasi-experimental. Although these authors concluded in favor of the treatment (CBE), statistical and measurement issues reduce confidence we can have in that conclusion. From a design perspective, the study by Kratochwill et al. (2001) is the strongest study with regard to generating information in support of causal arguments. Although the independent variable in this study focused on culturally based parent-school collaboration (FAST Program) rather than in-school culturally based pedagogy, it did directly address some of the key attributes of culturally based education as we mentioned above. The study provides a good example of design and selection of outcome measures. In particular, the rationale for, and use of, curriculum-based measures for student achievement is notable and provides a possible model of future research. In short, the connection between this small group of studies and culturally based education, the focus of the review, with the exception of the KEEP study, is tenuous. We believe it is important to point out here that we acknowledge the important and contributory work of other researchers on the broad topic of Native American Education. Other research was not included for the simple reason that it did not meet the established criteria selected for this report.

Commonly, research studies are evaluated in terms of some basic validity concepts. Among these are construct validity, statistical validity, internal validity, and external validity. Table 1 (page 41) lists each of the studies and provides a general rating (strong, moderate, or weak) for four types of validity by study. With regard to construct validity, the table reflects our judgment that all four studies provided enough information about the independent variable to allow for replication. Likewise, the treatments were implemented with fidelity or at least there was no information to the contrary. Statistical validity was apparent in all four studies. Data analysis was appropriate and basic descriptive statistics were provided. Dependent measures were standardized tests with acceptable technical qualities or, in the case of the two studies by Omizo (1989, 1998), information about validity and reliability was reported. By nature of the design, the internal validity was strong except for the study by Clark (1996) that was a quasi-experimental study. In that study, the use of intact groups resulted in treatment by subjects confounding. In this particular case, confounding may serve to explain the findings of no difference. Last, external validity in all four studies was somewhat restricted as indicated in Table 1.

The initial task of this review was to review experimental and quasi-experimental research related to the issue of culturally based education for Native American children. Given this initial focus, it is worthwhile to consider another dimension of validity of the studies evaluated here, relevance validity. We believe that the few studies that met our inclusion criteria to varying degrees are low with regard to relevance. All the studies involved populations of Native Americans/Hawaiians and all considered and acknowledged the cultural status of the groups involved. But, only one of the treatments or programs examined in this research involved the evaluation of curricula or pedagogical techniques that were directly grounded in any theory of culturally based education.

The purpose of this review of the literature was to locate, summarize, and analyze research that addressed questions about the effectiveness of culturally based education on the school achievement of Native American children. The first criterion was that the studies needed to address culturally based education. We considered and described theories that provide a conceptual link between culturally based education and improved school achievement, and we described six critical defining elements of culturally based education programs. Given the causal nature of the driving question, a second criterion for inclusion was that the research should employ experimental or quasi-experimental research designs. Studies we searched for were those that met both of these criteria.

We began our search with a recently completed broad review of the literature on Native American education (Demmert & Towner, 2002). A further search was conducted to locate and identify relevant studies that might have been missed in that review. The results were disappointing; only four studies came close to matching our rigorous inclusion criteria. These four studies met the design criteria, with two tangentially meeting the criteria (at best) for culturally based education interventions. The KEEP program, as mentioned earlier, is the exception. We found that most of the research on culturally based education is qualitative and descriptive in nature. We also found a number of studies that attempted to evaluate culturally based education using an ex post facto (or causal-comparative) approach in which comparisons are made, but the compared groups had been formed outside the research context. Although the programs investigated in these studies variously met the criteria for culturally based education, they did not meet the design requirements. Also common among the nonexperimental research we reviewed were a number of single group pretest-posttest designs. Although this approach to research is common in education, it is one that does not provide reliable evidence about effectiveness of interventions.

Non-Experimental Comparative Studies

Finding only six studies that met our inclusion criteria, we decided to broaden those criteria to include ex post facto comparative studies. Ex post facto comparative studies are those in which groups are compared but the researcher has no control over who got what and when. Groups were formed outside the context of the research and usually in a nonrandom fashion. By nature of the design, ex post facto research is extremely weak with regard to internal validity. The strength of these studies is to provide insight into possible causal links among key variables that might subsequently be evaluated in more rigorous research. In addition, this research can provide frameworks and identify key elements for developing educational interventions.

We have identified eight additional studies that meet our broadened criteria. As a group, they lack internal validity. However, what is lost in internal validity is gained in relevance to the topic that is under consideration here. All the studies reported below have found in favor of the particular treatment they investigated. There may be others that have found less favorable results and have not been reported or published. It is probably true that successful programs/treatments are more likely to be written up and published than unsuccessful ones.

Study 1: Murtagh, E.J. (1982). Creole and English as languages of instruction in bilingual education with Aboriginal Australians: Some research findings. *International Journal of the Sociology of Language, 36*, 15–33.

Description. The stated purpose of this study was to examine whether or not bilingual education, using Creole and English as languages of instruction, facilitates the learning of both English and Creole. Subjects for the study were Creole-speaking Aboriginal Australians in years one, two, and three from two different schools. In one school, instruction was delivered in English only. In the other school, instruction was half in Creole and half in English. These two existing groups were the “experimental” (bilingual) group and the “control” (monolingual) group. There were 29 subjects in both schools (groups) that participated in the study.

The groups were reported to be equivalent in age, amount of schooling, and home environment. The dependent measures were T-Unit analyses and total words in oral language samples in both English and Creole generated by the children in response to a stimulus. In “mother-tongue” oral language proficiency, bilingually schooled children were superior to monolingually schooled children. The difference favoring the bilingual group was also observed in English. Differences were most pronounced for the third-year students.

Comment. Although the author reports that the two groups were similar in age, amount of schooling, and home background, we are left with the fact that there could be a number of other factors in addition to language of instruction differences that contribute to observed differences in oral language proficiency. The outcome measures were of oral language only. No information on other school achievement variables was reported. Nonetheless, the data are at least consistent with the argument that bilingual education may be useful in facilitating oral language development in both languages. At the very least, these data *suggest* that bilingual instruction does not depress oral language development in either language for Native Aboriginal Australian children.

Study 2: Alaska Native Knowledge Network. (1998). *Alaska Rural Systemic Initiative: Year Three annual progress report, December 1, 1997–November 30, 1998.* Fairbanks, AK: University of Alaska. (ERIC Document Reproduction Service No. ED443603)

Description. The purpose of this initiative was to develop and implement pedagogical practices in science and math that incorporated indigenous knowledge and ways of knowing. In this report, Alaska Rural Systemic Initiative (AKRSI) participating schools (20 districts and 133 communities) were contrasted with non-AKRSI participating schools. No details are provided about differences between participating schools and non-participating schools. The assumption appears to be that they were similar.

With regard to school achievement, the report addresses admission rates to postsecondary education at the University of Alaska, dropout rates, and proportion of students in the top and bottom quartiles of the CAT-5. Enrollment rates at the University of Alaska were somewhat higher for participants than for nonparticipants. However, no information is provided about rates of enrollment at institutions other than the University of Alaska. The proportion of students scoring in the top quartile of the CAT-5, grade 8, was slightly higher for participants than for nonparticipants (differences of 4.2 percentage points in 1996 and 0.8 percentage points in 1997). Dropout rates were lower for participants than for nonparticipants (differences were 4.7 percentage points in 1996 and 2.8 percentage points in 1997). The raw numbers for these percentages were not reported. At grade 11, participating students in the bottom quartile decreased by 1.8 percent while the nonparticipants increased by 0.2 percent. In the upper quartile, there was a 2 percent increase for participants and a 3.8 percent increase for nonparticipants.

Comment. This large project had a number of driving questions, but only the reported data concerned with student achievement is included here. As is true with many program evaluations, the authors attempt to make the case that the program was broadly effective. So far as the achievement data are concerned, the argument is not compelling. In addition, it is not known what other factors are associated with participant status that might help to explain the results. That is, subject and group characteristics are confounded with the program which makes it difficult to attribute cause. At a minimum, the data may indicate that the inclusion of indigenous ways of knowing in pedagogical practices in science and math does not suppress school achievement.

Study 3: Bacon, H.L., Kidd, G., & Seaberg, J. (1982). The effectiveness of bilingual instruction with Cherokee Indian students. *Journal of American Indian Education, 21*(2), 34–43.

Description. The purpose of this study was to determine whether or not Native American students who had received bilingual instruction (English and Cherokee) in grades one through five were different in reading and math achievement in grade eight from a comparable group who did not have bilingual education. Three treatment groups were identified: those who had five years of bilingual education, N = 17; those who had four years of bilingual education, N = 18; and those who had no bilingual education, N = 18. The dependent variable was reading and math achievement measured by the SRA Achievement Series. Control variables or covariates were the Short Test of Educational Ability, age, sex, degree of Indian blood, pass/fail record, speaker of Cherokee, and father's educational level. Analysis of Covariance was used to analyze the data.

The findings were that those children receiving bilingual instruction (either four or five years) scored higher on the reading and math subtests than those who did not receive bilingual instruction. There was no difference in reading or math achievement between those who received four years of bilingual instruction and those who received five years of bilingual instruction.

Comment. This study is uncommon in the extent to which the authors attempted to establish adequate comparison groups. They employed a number of control variables that were used to either match the groups or as covariates in the analysis. It is not clear which control variables were used for which purpose. In any event, there was considerable effort expended to form equivalent comparison groups. This is the kind of procedure that needs to occur when working with non-randomly formed groups. The findings of the study are important in that they support the hypothesis that bilingual education for Native American students can be effective and that there appears to be no difference between four or five years of bilingual education in terms of achievement in reading and math. The external validity of the study is limited.

Study 4: Franks, M.E. (1988). *Using the gap reduction model to evaluate a successful bilingual/ESL program.* Paper presented at the annual meeting of the Mid-South Educational Research Association, Louisville, KY. (ERIC Document Reproduction Service No. ED303505)

Description. The purpose of this study was to compare the reading and language achievement of K–3 children in a Choctaw/English bilingual program with a similar group not participating in the program. The major goal of the ESL project was to improve students' English language use in a manner that did not devalue Choctaw language and culture. The program was operated in a classical pullout model with ESL instruction on a daily basis. The ESL instruction and materials were designed for use with this special population of Choctaw Native Americans. The comparison group (194 students) was similar in home language use and resided on the Choctaw reservation but did not participate in the ESL program. The dependent variables, reading and language, were assessed using the California Achievement Test administered in April of 1987 (pretest) and 1988 (posttest).

Gap reduction for both tests was defined as the difference between the means of the two groups divided by the standard deviation of the comparison group. The gap reduction was the difference between the pretest gap and the posttest gap. A Growth Index was calculated as the difference between the groups' growth divided by the growth of the comparison group, multiplied by 100. Visual displays of growth slopes from pretest to posttest were also included. The reported results were that the ESL children in grades one, two, and three showed greater gain in reading than the comparison group. Also, second- and third-grade ESL students showed greater growth on the CAT language and Total Battery in contrast to the comparison group. On these measures, the ESL group was lower than the comparison group on the first test and about the same on the posttests. Consequently, the growth slopes are steeper for the ESL group than for the comparison group.

Comment. The comparison group in this study was different from the ESL group on the first test. No information is provided regarding the extent to which this rather substantial difference was statistically significant or not. Other differences between the two groups were not addressed. The strength of the argument favoring the ESL program rests with the steeper growth slope, pretest to posttest, for those in the ESL program as compared with those not in the ESL program. A strong rival explanation for this steeper slope, in addition to the treatment, is statistical regression to the mean and it is not possible to attribute gains to the treatment with any degree of confidence. The outcome measure used in this study is assumed to have reasonable validity and reliability, although it is not reported.

Study 5: Rosier, P., & Holm, W. (1980). *The Rock Point experience: A longitudinal study of a Navajo school program*. Washington, DC: Center for Applied Linguistics. (ERIC Document Reproduction Service No. ED195363)

Description. Similar to the other studies in this group, this study selected and compared existing programs. The major purposes of the study were (1) to determine the effects of initial literacy instruction in Navajo on later reading achievement in English, and (2) to determine the effects of initial arithmetic instruction in Navajo with later arithmetic achievement in English. Two groups of Navajo students were compared in grades two through six, both of which entered school as monolingual Navajo language users. The first group of students (the bilingual group) consisted of students from Rock Point Community School who were taught to read in Navajo until the middle of second grade. The second group consisted of similar students who had been taught to read English only in an EFL program. Outcome measures were standardized achievement tests—the Stanford Achievement Test (SAT) and the Metropolitan Achievement Test (MAT).

The primary findings of the study were that for grade four and above, the Rock Point students who did not begin reading English until mid-second grade scored significantly higher that the comparison group on both the SAT and the MAT.

Comment. The authors correctly point out the primary limitations of their study, use of existing groups. In particular, they state "We cannot claim to have proved anything as abstract as 'bilingual education is better than…' We have attempted to show that at Rock Point, Navajo students who had received bilingual education did better on standardized achievement tests than did Navajo students at comparable schools who had received English-language-only instruction…" (p. 3). The authors go on to point out that there are a number of other factors associated with the Rock Point program, all or any of which could explain the observed results. They say: "One cannot prove that the incorporation of Navajo language instruction into the Rock Point program caused these results. We must admit that the use of the Navajo language …is part of a mix that includes…increased community control, increased parental involvement, increased number of Navajo and community teachers, intensive EFL activities, ongoing evaluation, and intensive and extensive NLT and ELT training" (p. 29).

Study 6: Wright, S.C., Taylor, D., & Macarthur, J. (2000). Subtractive bilingualism and the survival of the Inuit language: Heritage versus second-language education. *Journal of Educational Psychology, 92*(1), 63–84.

Description. This study examined the validity of a "subtractive bilingualism" and issues of language instruction and heritage language development in Native children. Briefly, "subtractive bilingualism" holds that increasing acquisition of a second, socially dominant language, corresponds with a slowing or reversing of competence in the heritage language. The study was conducted with Inuit children of Northern Quebec, kindergarten through grade two. The school and community in this setting offered some unique features for research. First, the community was reported to be very homogeneous. All children in the sample spoke their Native language (Inuttitut) as their first language. Additional groups for comparison were children whose first language was French or English. Second, the community is relatively isolated and there was homogeneity of background and social experiences in the sample. Third, the school offered parents three choices of language of instruction programs—Inuttitut, English, and French—for the first three years of schooling (kindergarten through grade two). Fourth, language programs were offered in the same school. Beginning in grade three, children were in either an English or French language of instruction program. The study was longitudinal using cohorts of children over three years.

The setting for this study may have allowed for a degree of control for teacher, school, and home background effects. The independent variable was language of instruction—Inuttitut, English, or French. Assignment to groups was a function of parent choice. The dependent variables were measures of language competence in the three languages. For each language, a series of tests were developed in the project to measure general language proficiency, conversational language proficiency, and academic language proficiency. Tests were administered at the beginning and end of kindergarten through grade two, six administrations altogether.

Data were analyzed using multivariate analysis of variance and covariance. Scores on the measures were similar across groups at the beginning of kindergarten. By the end of grade two, the major findings were that children in the Inuttitut program scored higher than children in the other two programs in Inuttitut tests, and Inuttitut language competence of Native children in the Inuttitut program was equivalent to the language competence of English first language children in the English program and French first language children in the French program. Findings were interpreted to support the idea of "subtractive bilingualism" and indicate that instruction in the heritage language may reduce the subtractive effect.

Comment. This was a carefully executed study and, as the authors point out, the particular context of the research offered some unique opportunities for comparative research. The findings are not surprising. That is, the data indicate that children who have more practice with a language will acquire competence in that language than children who have less practice. It would be useful to know how the groups compared in second language competence later in their schooling experience. As well done as this study may be, it has a few limitations, all of which are clearly acknowledged by the authors. First, the study design has limited internal validity given the manner in which the comparison groups were formed by parental choice. Although some confounding variables were controlled due to the research context, there are likely to be other group differences (known or unknown) that can explain the observed results. Second, even though great effort was given to the development of the outcome measures, there is no information provided about validity or reliability. In addition, comparability of the measures across language forms is unknown. Third, the uniqueness of the research context limits external validity.

Study 7: Brenner, M.E. (1998). Adding cognition to the formula for culturally relevant instruction in mathematics. *Anthropology & Education Quarterly, 29*(2), 214–244.

Description. This article details the development of pedagogical practices in mathematics education for young Native Hawaiian children (kindergarten and grade two) in the Kamehameha Early Education Project (KEEP). The author provides a good description of how educational materials and practices were developed that reflected three dimensions of cultural relevance—cultural content, social content, and cognitive. She points out that previous research in mathematics tends to reflect two paradigms. The first research paradigm, ethnographic research, uses qualitative research tools such as participant observation and interviewing combined with social and cultural theory to examine cultural context and how it can be incorporated into the mathematics curriculum. The second paradigm, mathematics education, targets how children learn mathematics with reference to cognitive science. There are two different comparative studies reported in this article. One comparison was at the kindergarten level. Here, an "experimental" class is compared to a previous year's class. A second comparison was at the second-grade level where the performance of a targeted second-grade class is compared to another second-grade class in the project.

The kindergarten classroom study involved a comparison of an experimental class in which culturally based mathematics education practices were developed consistent with the three dimensions mentioned above. At the end of the year the total scaled scores in mathematics on the Metropolitan Achievement Test for the targeted or "experimental" group were compared to the scores of the previous year's class (i.e., the "control" class).

It was found that the experimental class scored significantly higher ($t = 2.75$; $p < .01$) than the control class.

The second-grade study also examined culturally relevant curricula in mathematics designed by the researcher and the teacher. At the end of the year, the mathematics scores on the Metropolitan Achievement Test for the targeted group (experimental) were compared to other second-grade classes (control) in the school. It is reported that the scores for the "experimental" group exceeded those of the control—83rd percentile versus 76th percentile. No information about the statistical or practical significance of this difference is provided.

Comment. This article makes an important contribution with regard to providing a good description of a three-dimension framework for the development of culturally relevant pedagogical practices, developed from different research paradigms, and examples of how it can be implemented. However, the design of the research is very weak so far as internal validity is concerned and we can have little confidence that the treatments are responsible for the observed differences. Basic descriptive statistical information (means and standard deviations) are not reported and, for the second-grade study, no information about the statistical or practical significance of the differences is reported. The studies were conducted in a unique setting, the KEEP project, and therefore external validity is limited.

Study 8: Cottrell, M.C. (1971, February). *Bilingual education in San Juan County, Utah: A cross cultural emphasis*. Paper presented at the annual meeting of the American Educational Research Association, New York, NY. (ERIC Document Reproduction Service No. ED047855)

Description. The purpose of this study was to evaluate a bilingual education program implemented in three Utah schools. The populations in these schools were children who were reported to be low achievers and were composed of 20 percent Navajo students. The "experimental" group consisted of 84 Navajo and Anglo children in kindergarten and grade one. The "control" group was 108 Navajo and Anglo children in kindergarten and grade one attending other schools in the region. The treatment program involved Navajo as the language of instruction until children developed competence in English. In addition to the bilingual element of the program, cultural knowledge was also included in the curriculum. The control groups continued with the standard monolingual English program.

The study covered one academic year and the children were tested at the beginning and the end of the year. In the fall, scores were obtained using the Anton Brenner Developmental Gestalt Test (BGT) and a researcher-developed oral language measure. First-grade children were also tested on the Metropolitan Readiness Test (MRT) and the California Test of Personality (CTP). In May, the kindergarten children were tested with the CTP and the MRT. First-grade children were tested with the CTP and the Metropolitan Achievement Test (MAT). Oral language samples were again collected and evaluated by "language majors" using a seven-point rating scale designed by the researchers.

Data were analyzed using analyses of covariance where the fall measures (pretests) were used as covariates to adjust the scores on the spring measures. The findings were that there was no difference between the two groups of Navajo children on the spring achievement measure (MAT). The results of no difference were interpreted to indicate success of the program because the "experimental" schools had historically lower achievement than the "control schools." However, no data are provided relevant to differences between the schools.

Comment. Significant confounding of schools, teachers, and locations with the treatment program is typical of ex post facto research designs such as the one used in this study. It is, therefore, difficult to have much confidence that the treatment was or was not effective. However, there was no evidence that the inclusion of heritage language and cultural knowledge in the curriculum had a negative impact. The authors judged the findings of "no difference between groups" supported a positive program impact, because the treatment schools were historically underachieving relative to the control schools. Serendipitously, the authors point out that the inclusion of heritage language and cultural knowledge in the curriculum was viewed as very positive by the community. As a result, home-school relationships were strengthened. We have consistently observed that the research in culturally based education programs for Native Americans seems to indicate that home-school relationships are strengthened when heritage language and cultural knowledge are incorporated into the curriculum. Strong home-school relationships have been widely shown to be associated with effective schools.

Discussion

It is interesting to observe that the expansion of our inclusion criteria to encompass comparative ex post facto studies results in a small group of studies that are more relevant to culturally based education but provide less in the way of data in support of causal links. In contrast, the experimental studies we reviewed are stronger with regard to supporting causal arguments but are less relevant so far as the treatment of interest is concerned. What is needed, of course, is scientifically rigorous research that is on target regarding culturally based education as an educational treatment or program. Given the difficulties involved in doing experimental research in applied programs where the treatments of interest are already established, the situation is understandable. Findings of the nonexperimental studies discussed above are summarized in Table 2 (page 43).

The reader will notice that Table 2 (Summary of Nonexperimental Studies) does not contain a column for "Internal Validity." The ex post facto comparative designs used in these studies are weak with regard to internal validity and we prefer to err on the conservative side and interpret the results as simple associations among variables rather than causal links. The findings of these studies might best be viewed as supporting or generating tentative working hypotheses. Having said that, we list some of these working hypotheses below.

- Native children whose Native language is the language of instruction in school learn that language better than children who are taught in a dominant second language.

- Children who are taught in their Native or heritage language with culturally relevant pedagogy will at least do no worse on standard measures of achievement, and may do better, than children who receive instruction in a dominant second language.

- Children who are more proficient with their heritage language also are more proficient with a second language.

- Programs that include local heritage language and cultural elements serve to strengthen home-school relationships. This connection may be an intervening variable explaining student achievement.

There are a few descriptive and correlational studies that tend to support the above listed hypotheses. Stairs (1987), for example, found a correlation between early mastery of Native language and later achievement in English among Inuit children. Positive cultural identity, presumed to be related to culturally based education programs, was linked to higher achievement by James and associates (1995). It appears that culturally based education programs that are developed cooperatively with parents and community members strengthen home-school links and the relationship between home and school has been documented as a characteristic of effective schools (see NWREL review of literature on effective schools).[37]

Finally, there are a number of case studies that present descriptions of excellent language and culturally based education programs that hold promise for adding to the discussion on culturally based education programs, and the influences on improving academic performance. The case study by Lipka and McCarty (1994), *Changing the Culture of Schooling: Navajo and Yup'ik Cases,* represents one of the most informative and carefully presented set of cases. They describe schools that were being transformed in two communities, one a Yup'ik (Eskimo) school in Alaska, and the other a Navajo school in Arizona. They found four factors that stood out as important influences on their successful development and ability to make change. These factors were local administrators who played critical roles in supporting the efforts to change the schools; local community leaders who do not support change, and align themselves with a school administration that does not support change; a connection between Native educators and non-Native educators that provided opportunities for meaningful discourse; and adequate financial resources to carry out the indigenous concepts of culturally based education.[38] Other case studies like the unpublished Punana Leo Language Immersion[39] appear to support the findings of Lipka and McCarty (1994). (For a broader review of studies of this nature see Appendix II.)

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[37] See Cotton, K. (1995).

Given the lack of targeted experimental/quasi-experimental research, it is worth revisiting, briefly, what can be learned from the nonexperimental literature reviewed by Demmert and Towner (2002). The pertinent literature we reviewed represented efforts to examine the effectiveness of Native language and cultural programs in the context of schools. This literature clearly shows that there is a strong and widespread interest and concern among Native peoples regarding the preservation and revitalization of Native language competence and cultural knowledge among Native American young people. At the same time, it is widely recognized that young Native Americans need to develop competence and skill in English and Western culture if they are to compete and thrive in today's economy. This demand to develop bilingual and bicultural (culturally based) education places a challenging load on schools, communities, students, and teachers. This will require a new look at the culture of the school, teaching strategies, and ways of interacting with Native students and communities. Also, there is a need to objectively evaluate the impact of these programs on school performance.

The literature we reviewed was characterized by the description of a variety of programs designed to teach Native language and culture in a school setting. There are numerous examples of such programs in the nonexperimental literature. Typically, these programs involve immersion to develop early Native language and cultural knowledge. Once this goal is accomplished, the mastery of Native language and culture is assumed to provide a platform for the transmission of academic knowledge, and the mastery of English language arts and advanced academic skills. We observed that many of the programs described in the literature are developed locally and seem to be implemented in relative isolation from one another. That is, the experiences of earlier programs were not heavily relied upon in the development of subsequent programs in other geographic locations, so far as we were able to determine.

An analysis of the descriptive and qualitative research on CBE programs reveals a number of examples of program implementation and some common factors that represent the elements important to culturally based program design. The most salient of these factors is the notion that local communities must play a strong and active role in developing culturally based curricula and in delivering instruction. In nearly every case, interview and questionnaire data indicate that such participation and involvement is highly valued among Native communities. Necessarily, this sort of community involvement serves to strengthen home-school cooperative links and facilitates communication. Strong home-school links have been shown elsewhere to be highly correlated with effective schooling and student achievement.[40]

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[38] Lipka, J., & McCarty, T.L. (1994). Changing the culture of schooling: Navajo and Yup'ik cases, *Anthropology & Education Quarterly, 25*(3): 266-284.

[39] Demmert, W.G., Jr. (1993). Language, Learning, and National Goals: A Native American View. *The National Education Goals, Goal 3, The Issues of Language and Culture*. Washington, DC: Center for Applied Linguistics, pp.25–33; Calica, Kaÿeÿe, & Rawlins, Nāmaka. (1999). *E Ola Ka ÿŌlelo Hawaiÿi (The Hawaiian Language Shall Live)*. Unpublished case study of the Punana Leo Hawaiian Language Preschool and Kaiapuni Hawaii Public Hawaiian Language Schools Model, Hilo Hawaii.

We noted in our earlier review that the contribution of the qualitative and descriptive research is limited when the primary question concerns effectiveness of intervention on student achievement. We see examples of program design and evidence that CBE programs are well received by the community, thus strengthening home-school links, but there is very little in the way of objective data regarding the effects of such programs on student achievement. We pointed out that it is important for future research to be characterized by designs with some kind of controls; the use of objective measures of student achievement that are valid and reliable; coordination of effort to ensure that replication is built in; funding of research efforts that meet basic standards of scientific research; combining of results using meta-analytic techniques; and dissemination of findings. As it stands, there are virtually no quantitative data that give us clear or definitive answers about the direct impacts of culturally based education on children's school achievement. The exception, again, is the KEEP study.

The qualitative research findings presented in the earlier review of the research literature clearly provide support for each of the themes presented in that report. They also provide a basis for developing a national study of Indian education that focuses on a series of quantitative approaches. First, the review tells us that the research literature in the field of early childhood education is severely limited for Native Americans; that what is available is not inconsistent with the literature on other racial or ethnic groups; and that there is much to learn about the influence of language immersion and culturally based education programs on intellectual development. Second, the section on Native language and cultural programs in the schools clearly shows broad-based interest among communities, educators, and researchers about the influences and place of language and cultural programs in the formal school setting. Language programs that do not start early in a youngster's life appear not to work as well as those influenced by parents and early environments. The third section on teachers, instruction, and curriculum suggests a needed discourse and quantitative research activity on culturally based principles of high-quality teaching, instruction, and curriculum that start with where children are currently situated in their learning curve. Community influences and school control issues are related to attitudes about whom the school is expected to serve, ownership of the school, and the relationships necessary for motivating and challenging both parents and students to view formal education as a necessary requirement of this day and age. Characteristics of successful students, factors leading to success in school, and reasons for leaving school early are all inter-related with social, cultural, and economic factors that must be assessed if we are to develop confidence in our solutions to problems created when events outside the school setting are so influential regarding whether students succeed in school.[41]

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[40] Cotton, K. (1995). *Effective schooling practices: A research synthesis, 1995 update.* Portland, OR: Northwest Regional Educational Laboratory.

[41] Demmert & Towner.

Improving the Research Base on Culturally Based Education for Native Americans

There are a number of actions that can be undertaken to improve the quality of the research base on the effectiveness of CBE programs. There should be a coordination of effort across geographic areas and tribal affiliations. Studies should be designed that meet the standards of scientific research and that allow for 1) the examination of common outcome variables, 2) replication of research studies across settings, and 3) combining of results using meta-analytic techniques (see Figure 1 on page 46). Qualitative and quantitative research approaches must be coordinated within studies. Well-done quantitative research can provide reliable and valid information about the effects of culturally based education interventions; qualitative research can complement these findings by providing information about why an intervention did or did not work. In our opinion, this combination of research paradigms holds the most promise for providing clearer answers to important questions about the school performance of Native American youngsters. But, consistent with the No Child Left Behind legislation,[42] and the report of the Coalition for the Evidence Based Policy, the driving need is for a series of scientifically valid studies to acquire the reliable evidence needed for educational progress.[43]

In addition to these general recommendations, we would suggest some guidelines for further research on culturally based education programs. What follows is not an exhaustive list of suggestions. However, they do represent some minimum standards of scientific research that we believe would improve the quality of the research base. In offering these suggestions we are making the assumption that the single most important research goal is to learn more about why, how, and if culturally based education improves the school performance of Native American young people.

1. *Carefully define culturally based education interventions*. Culturally based education interventions need to be carefully developed with reference to theory and the six critical attributes we have listed in this review. In addition, detailed description of curriculum elements is important along with specific information regarding the nature and amount of community involvement. This information will allow for replication of interventions across geographic and tribal locations and settings.

2. *Target student learning as the primary outcome variable*. Although it is useful and interesting to know how participants may feel about a program and why it was or was not successful, we believe it is necessary to first have some data about student learning as an outcome variable. There are a number of possible measures

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[42] See Public Law 107-110. (January 8, 2002). *No Child Left Behind Act of 2001.*

[43] Coalition for Evidence Based Policy. (November, 2002). *Bringing evidence-driven progress to education: A recommended strategy for the U.S. Department of Education.* A Report of the Coalition for Evidence-Based Policy.

of student learning that might serve this purpose. We have listed a few possibilities in Table 3 (page 45). All of the listed measures have a degree of objectivity and technical adequacy, qualities that are essential in evaluating student learning outcomes. It is our sense that research studies should include *multiple measures* of student learning.

The status/demographic measures and the conventional measures are familiar to most researchers and are commonly employed in evaluation research. In addition, these are measures that are often readily available and collected as part of on-going assessment efforts at local levels. Less common are curriculum-based measures (CBMs). All of these measures include *rate* as an important parameter. We believe these can be an important addition to a research effort. These measures have a long history of use and have substantial research documenting their high reliability and validity. They have the advantage of directly reflecting the curriculum and important outcomes. They lend themselves to criterion reference and can be used to monitor student progress over time. The measures are simple to use and easy to score. They are inexpensive and require little in the way of student work time. There is much to recommend them and we believe they should receive serious consideration.

3. *Include estimates of effect size, particularly when using small groups.* Statistical significance and basic descriptive statistics are essential and need to be included in any quantitative research study. However, when sample sizes are small (as is commonly the case with Native American research), estimates of effect size should be included.[44] When using small samples there is an elevation in the error term and a concomitant drop in power of the statistical test and an increase in the likelihood of a Type II error. Effect size estimates can provide useful information about the magnitude of an effect independent of sample size. In addition, we recommend that confidence intervals be reported.[45]

4. *Design research with an adequate comparative base.* As we have seen in the literature, there is almost a total absence of controlled research on culturally based education programs. Controlled research requires a basis for comparison such that alternative explanations for observed results can be eliminated. Typically, experimental research accomplishes this through the formation of randomly formed groups, one of which receives a treatment/intervention and one that does not. Quasi-experimental research requires attention to the possibility of important initial group differences that introduce confounding variables and alternative explanations. In order to establish a good comparative base, pre-measures need to be collected and analyzed so that groups can be matched or, in the alternative, statistical control can be applied.

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[44] Rosenthal, R., & Rosnow, R. (1991). *Essentials of behavioral research: Methods and data analysis*. New York, NY: McGraw-Hill; and Eosenthal, R., Rosnow, R., & Rubin, D. (2000). *Contrasts and effect sizes in behavioral research*. Cambridge University Press. UD.

[45] Smithson, M. (2000). *Statistics with confidence*. Thousand Oaks, CA: Sage.

> There are a number of problems associated with doing controlled research with control and experimental groups in applied settings. We have listed some of these problems earlier. A complementary approach to between-group comparisons is to use some variation on time series designs. These designs can be used with a single group and establish a basis for comparison by having subjects serve as their own controls. That is, the same subjects measured repeatedly under different conditions. There are a number of implementation difficulties with these designs; the most obvious is determining appropriate measures. We believe that CBM's (mentioned earlier) have some promise in this context. These measures can be locally developed and criterion targets for performance can be locally established. Given performance targets, student progress can be monitored and evaluated with reference to expected slopes of academic growth.
>
> Conceptually similar to the time series design is a family of designs known as single-subject designs.[46] These designs have a long history in the field of special education. They are strong designs with regard to internal validity and external validity can be strengthened through replication. They are relatively easy to set up and to use in applied settings. Like the time series design, single subject design variations require repeated measurement over time. Merged with CBM's, single-subject research designs can provide solid data complementary to that generated with classical group designs.[47]

Finally, there is the question of feasibility. Why are there so few studies of culturally based education that have achieved the design conditions that allow confidence in assessing CBE's efficacy:

- Even though the preponderance of non-experimental evidence is in its favor?
- Even though it carries strong theoretical justification from the most powerful available psychological/sociological theories?

We may find some hints of the difficulties besetting this research field by attending to the analyses offered by the researchers of the one successful inquiry. The KEEP designers have offered detailed discussions, in which they attribute their success in this long-term research program to a number of crucial factors:[48]

> *Long term and adequate funding*, which allowed the adequate design of the model, design of the professional development program, and consequently strong and accurate performance by teachers of the program.

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[46] Neuman, S.B., & McCormic, S. (Eds.). (1995). ***Single-subject experimental research: Applications for literacy.*** Newark, DE: International Reading Association.

[47] Shinn, M.R. (Ed.) (1989). ***Curriculum-based measurement: Assessing special children.*** New York, NY: Guilford.

[48] See Tharp, R.G., & Gillimore, R. (1982); Tharp, R.G. (1981).

Accountability of teachers, administrators, and professional developers for enacting the program with fidelity. (In the KEEP case, the researchers were the formal supervisors of all school personnel.)

Responsiveness to student achievement data as a clear, enforced organizational value.

These conditions are rare indeed in Native American schools, but some approximation to the KEEP conditions is necessary to conduct sound experimental tests of culturally based education. Whether they can be found or created is probably the most crucial determinant to feasibility of a national experiment.

Observations on the Quantitative Research on Bilingual Education: An Annotated Bibliography

Rossell, C.H., & Baker, K. (1996). The educational effectiveness of bilingual education. *Research in the Teaching of English, 30*(1), 7–74.

This review of the literature proposes that transitional bilingual education (TBE) is never more successful than special structured immersion programs for limited English proficient children, where the students are in self-contained classrooms composed solely of English learners, and where the instruction is in English at a pace they can understand. Rossell and Baker conclude that the research evidence does not support transitional bilingual education as the best form of instruction for limited English proficient children. Their study is based on 75 "methodologically acceptable" studies out of 300 screened program evaluations.

Greene, J.P. (1998). *A meta-analysis of the effectiveness of bilingual education.* Claremont, CA: Tomas Rivera Policy Institute. Retrieved February 4, 2003, from http://ourworld.compuserve.com/homepages/JWCRAWFORD/greene.htm

This study concludes that children with limited English proficiency, taught using at least some of their native language, perform significantly better on standardized tests than similar children who are taught only in English. The author states that an unbiased reading of the scholarly research suggests that bilingual education helps children who are learning English. The conclusion is based on the statistical combination of 11 studies that meet minimal standards for the quality of their research design from a total of 75 studies reviewed, from Baker and Rossell (1996). The 11 "methodologically acceptable" studies reported on indicate a statistically significant difference in performance in academic areas except for math after an average of two years of bilingual education instruction. Greene refutes 64 of Baker and Rossell's "methodologically acceptable" studies, excluding the studies for various reasons such as redundancy, unavailability, nonevaluations of bilingual programs, inappropriate control groups, unreasonably short periods of time to measure effects, and inadequate control for differences between bilingual and English-only students.

Cummins, J. (2002). *Educational research in bilingual education.* Retrieved February 4, 2003, from the I Teach I Learn Web site: http://www.iteachilearn.com/cummins/educationalresearch.html

Cummins' article refutes both Rossell and Baker and Greene's interpretation of "methodologically acceptable" studies. He shows that Greene's meta-analysis makes no attempt to test the theoretical propositions underlying bilingual education or alternative English-only programs. The credibility of even the 11 studies accepted by Greene is shown to be inadequate, in the lens through which the research is examined. He characterizes Rossell and Baker's literature review as having inaccurate and arbitrary labeling of programs, inconsistent application of criteria for "methodological acceptability," and highly inaccurate interpretation of the results of early French immersion programs. This article states that the dominant assumption among academic opponents and advocates of bilingual education has been the drawing of policy-relevant conclusions regarding the effectiveness of bilingual education *only* from "methodologically acceptable studies" (emphasis added). However, there is an enormous amount of relevant and interpretable research, both internationally and within the United States, that speaks directly to the bilingual education policy issues. Cummins suggests that the policy issues have remained confused and contested at least partly because the bulk of the relevant research has been virtually ignored, both by advocates and opponents of bilingual education. The relevance of this research is not apparent within the dominant paradigm because the studies do not conform to the criteria of acceptability within this paradigm. However, when the research is examined from the perspective of an alternative paradigm, its relevance is immediately apparent.

Comment. From this preliminary review of the bilingual literature research it appears that there will be few if any acceptable quantitative research models that might be used for a national study of the influences of language and culture on academic performance. The review of the research literature on Native American students is not inconsistent with these reviews of the bilingual literature—that is, most of the work is qualitative.

Concluding Remarks

There is much still to review, analyze, and discuss in light of what is available from the research literature for both Native Americans, and for other groups requiring some form of language and cultural support, with an objective to improve student academic performance. The responsibility for schools to meet the academic needs of the students and communities they serve is not an issue. There is clearly a social and moral responsibility to do so. What is at issue, from a Native American perspective, is how to accomplish this objective in a manner that will "create good people that are knowledgeable and wise" in a language and cultural context that supports their many histories and traditions.

There are federal policies that clearly support the Native American interest in promoting the continued development of traditional language and cultural priorities. There are clearly federal programs that support educational programs that support continued development of traditional language and cultural tribal interests. There is clearly a significant volume of qualitative research literature for both Native Americans and other ethnic and racial groups that supports their community interest in including language and cultural priorities. There is a close tie between participating in culture, according to Jerome Bruner, and learning, remembering, talking, and imaging, the tool kits by which we construct our world and the conceptions of our identity and our powers.

The dilemma for researchers and policy makers is one of evidence. Is it scientifically possible to show a direct connection between improved academic performance and culturally based education interventions? The KEEP research project is the only report found to date that provides insights on how this might be accomplished.

The real challenge may well be one of how to build upon culturally based education interventions as part of the process that will set the stage for improved academic performance and citizenship.

Table 1
A Summary of the Validity of the Experimental and Quasi-Experimental Studies

Study	Construct Validity	Statistical Validity	Internal Validity	External Validity
Tharp, 1982	Strong. Independent and dependent variables are clearly described; intervention implemented with apparent fidelity.	Strong. Outcome measures have validity and reliability; analysis is appropriate and fully reported.	Strong. Experiment three involved random assignment to conditions within the same school.	Moderate. Project developed in laboratory school and exported to one public school.
Omizo, et al., 1998	Strong. Independent and dependent variables are clearly described; intervention implemented with apparent fidelity.	Moderate to strong. Relationship of outcome measure to measures of achievement not given; outcome measure reported to be valid and reliable; analysis is appropriate and descriptive statistics reported.	Strong. Subjects were randomly assigned to conditions. Possible novelty effect because control group received no treatment; experimental subjects pulled out for treatment.	Moderate to weak. May not generalize to populations other than Native Hawaiian; treatment not particularly relevant when goal is to examine student achievement as the primary outcome, a relevance issue.
Clark, 1996	Strong. Independent and dependent variables are defined and described; no evidence that treatment was not implemented with fidelity.	Moderate. No information about validity and reliability of outcome measures; may not have been appropriate given the treatment.	Weak. Used intact groups; subject characteristics confounded with treatment.	Weak. Treatment is one packaged computer program; rapid developments in technology make this particular program obsolete.
Omizo, et al., 1989	Strong. Independent and dependent variables are clearly described; no evidence that treatment was not implemented with fidelity.	Moderate to strong. Relationship of outcome measure to measures of achievement not given; outcome measure reported to be valid and reliable; analysis is appropriate and descriptive statistics reported.	Strong. Subjects were randomly assigned to conditions. Possible novelty effect because control groups received no treatment; experimental subjects pulled out for treatment.	Moderate to weak. May not generalize to populations other than Native Hawaiian; treatments not particularly relevant when outcome target is student achievement; relevance issue.

Table 1 (Continued)
A summary of the validity of the experimental and quasi-experimental studies

Study	Construct	Statistical	Internal	External
Lipka & Adams, 2002	Moderate. Independent variable needs more detailed description; extent of treatment fidelity unknown.	Weak. Use of multiple-*t* tests not recommended; conversion of raw scores to percentages is questionable, gain scores may be unreliable.	Moderate to weak. Quasi-experimental study; treatment confounded with teachers and subject/school characteristics	Moderate. Limited to the particular treatment, setting, and population.
Kratochwill et al., 2001	Strong. Definition of independent variable is complete; CBMs have strong validity and reliability.	Strong.	Strong. Random assignment of matched pairs.	Strong.

Table 2
Summary of Nonexperimental Studies

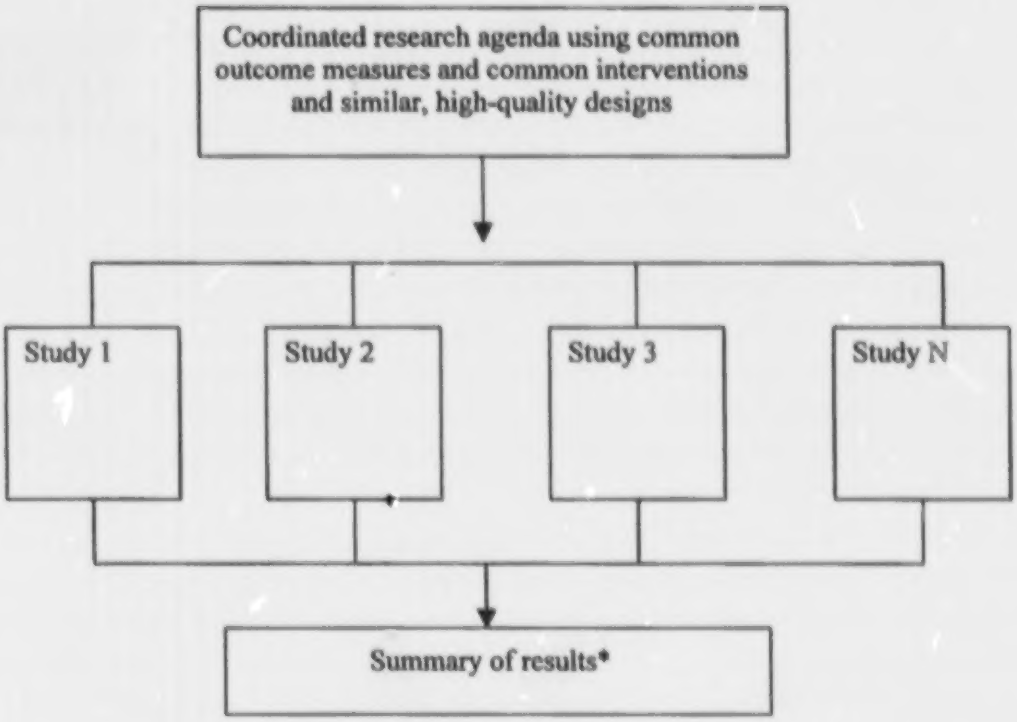
Study	Construct Validity	Statistical Validity	External Validity	Tentative Contributions
Murtagh, 1982	Moderate. Intervention described as amount of Native language of instruction in two programs.	Moderate. Outcome measures were common T-Unit analyses often used to examine language production. Descriptive and inferential statistics reported.	Weak. Results are limited to the group (Aboriginal Australians) and setting.	The study provides tentative information about a possible link between bilingual education and language development in both languages, suggesting that bilingual education may be associated with language development in both languages.
Alaska Rural Systemic Initiative, 1998	Strong. Details of the program elements and implementation procedures are provided.	Moderate to weak. The outcome measure is assumed to have reasonable technical qualities; analysis of group differences is in terms of percentage point differences only. Little in the way of statistical analysis of results.	Moderate. Broad sample in Alaska. Probably limited to that setting and that broad program.	The data suggest that at least the inclusion of Native ways of knowing in the curriculum was not associated with a depression of scores in math and science.
Franks, 1988	Moderate. Intervention is described as a bilingual Choctaw/English bilingual program.	Moderate to strong. The outcome measure was a standardized test assumed to have reasonable technical qualities; details of the data analysis are reported including visual displays of growth slopes.	Moderate to weak. Findings limited to program characteristics and setting.	Statistical regression is a strong candidate for a rival explanation of the results. To the extent that this explanation can be minimized, the data may suggest that bilingual education was associated with accelerated growth in achievement.
Bacon, et al., 1982	Moderate. Defined treatment as five years of bilingual education, four years of bilingual education, and no bilingual education	Moderate. Outcome measure was a standardized achievement test; no descriptive statistics reported; inferential statistics fully reported; a number of control variables used	Moderate. Limited to program characteristics and setting	Data suggest that bilingual education compared to no bilingual education may be associated with higher achievement; may not be an association between achievement and amount of bilingual education (four years versus five years).

Table 2 (Continued)
Summary of Nonexperimental Studies

Study	Construct Validity	Statistical Validity	External Validity	Tentative Contributions
Rosier & Holm, 1980	Moderate. Rock Point School program briefly described where Native Navajo speakers taught in Navajo through middle of grade 2, compared to Native children in an EFL program. Few details of program elements provided; children in grades 3 through 6 were studied.	Moderate. Outcome measures were standardized achievement tests (MAT and SAT). Data analysis included bar graphs and multiple *t* tests rather than a preferred ANOVA or regression model	Moderate to weak. Limited to Rock Point School programs and population.	The data suggest that there may be some association between early instruction in Native language and higher achievement in grades 4 through 6.
Wright, et al., 2000	Moderate. Provided some details of the program and setting.	Moderate to strong. Outcome measures were thoughtfully developed, but no information on validity, reliability, or comparability across tests was provided. Analysis of data fully reported	Weak. The study was conducted in a unique setting and with a unique population. Although the setting strengthened some aspects of the study, it also limits generalizability.	The data provided some evidence in support of a subtractive theory of bilingual education.
Brenner, 1988	Strong. Provides a theoretical framework and examples of the development of culturally relevant pedagogical practices for Native Hawaiians.	Weak. Although the outcome measure was a standardized test (the MAT), data analysis was incomplete or missing.	Weak. Probably limited to Project KEEP laboratory school and Native Hawaiians	Provides a good model for the development and implementation of culturally relevant pedagogy. At least, the data do not show that children do any worse as a result of implementing these practices.
Cottrell, 1971	Moderate. The intervention is not completely described other than to say language and cultural concepts were included in the curriculum. Treatment fidelity is unknown.	Moderate. Outcome measures were commonly used standardized tests. The rationale for the use of the CPT and the concomitant interpretation is not provided. Data are fully presented.	Moderate to weak. The intervention appears to be similar to other bilingual/bicultural programs. Probably limited to the particular setting and population.	The authors make the argument that "no difference" might be viewed as program success. No data indicating the inclusion of bilingual/bicultural elements in the curriculum depresses achievement scores.

Table 3
Some Possible Quantitative Outcome Measures for Student Achievement

Status and Demographic Variables	Conventional Measures	Curriculum-Based Measures
• GPA • High School Completion • Entry into post-secondary education programs • Employment	• High-stakes measures such as the ITBS, CTBS, and state-developed assessments of achievement • Locally-developed assessment tools	• Reading fluency • Math • Writing • Phonemic awareness • Letter name knowledge


Coordinated research agenda using common outcome measures and common interventions and similar, high-quality designs
Study 1
Study 2
Study 3
Study N
Summary of results*

*In the near term, the summary would have to be more a synthesis than a formal meta-analysis. The latter requires more studies than we are likely to have in the near future.

Figure 1. Coordinated Research Agenda Chart

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Note: The following is a list of articles, legislation, literature reviews, and other resources that are cited in footnotes. The annotations to the research literature are included in the body of the report.

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Appendix I: Resources Utilized in the Literature Search
General Search Strategies and Descriptors used

1. Bibliographies

The American Indian and Reading: A Bibliography

> Compiled from electronic resources at the National Library of Education, and other collections. Presented by Denise Rosenblatt, Reference Librarian

Lit. Review-Native Language and Culture: Additional Material 3/26/01

Annotated Bibliography of Native Bilingual Education

2. Cambridge Scientific Abstracts

(www.csa3.com)
Wed Oct 2 10:48:12 2002
Cambridge Scientific Abstracts
Database: ERIC

Descriptors. Query: KW = (American Indians or Alaska Native or Native Hawaiian or Inuit or Eskimo or Aleut or First Nation People or Native Canadians) and KW = (language or culture*) and KW = (academic performance) and PT = (143)
Your Comments:

Record 1 of 7

3. DIALOG(R)File 35:Dissertation Abs Online, (c) 2001 ProQuest Info&Learning. All rts. reserv.

Descriptors. American Indians, Native Americans, Aboriginals, Indigenous People, Native Hawaiians, and First Nation People cross-referenced with anything having to do with Language and/or Culture from 1985 to the present. All research reports were included, i.e., (evaluation/feasibility and research/technical and statistical data). The second file is for Bilingual Education and limited to experimental, quasi-experimental, and such terms) at all levels cross-referenced with again all research reports (evaluation/feasibility and research/technical and statistical data) and also with key words anywhere in the article such as "experimental," "quasi-experimental," "statistical," or "quantitative."

4. Digital Dissertations (Dissertation abstracts online) Address: ttp://balder.lis.wwu.edu:2260/dissertations/gateway

Descriptors.

- Education
- Education, elementary
- Education, higher
- Education, psychology
- Education, teacher training
- Education, intercultural
- Education, early childhood
- Education, language and literature
- Education, curriculum and instruction
- Bilingual and multicultural
- Curriculum and instruction
- Language
- Linguistics
- Language and literature
- Sociology, ethnic and racial studies

Descriptors.

- American Indian
- Academic achievement
- Academic success
- Bilingual(ism)
- Bicultural
- Bilingual education
- Culturally relevant
- English as a Second Language
- Navajo
- Native American
- Native American Student(s)

5. ERIC Clearinghouse on Rural Education & Small Schools (ERIC/CRESS) Search

Descriptors. American Indian languages or Eskimo Aleut languages or Inupiaq or Native language instruction or Yup'ik or American Indian culture or cross cultural studies or cultural activities or cultural awareness or cultural background or cultural education or cultural influences or cultural relevance or culturally relevant education

And

American Indian* or Alaska Native*

And

mathematics achievement or reading achievement or writing achievement or academic achievement or academic failure or achievement gains or educational attainment or grades [scholastic] or educational attainment

and

PT = (142 or 143) (These are the designations for research/technical and evaluation/assessment reports--can be journal articles, books, or papers)

5.1 NISC DISCover Report. ERIC - 1993 - March 2002

Descriptors and Search Strategy.

#1: 2,639 : km = bilingual education
#2: 19,195 : (STATISTICAL ANALYSIS or QUASIEXPERIMENTAL DESIGN or quantitative* or experimental*)
#3: 76 : #1 and #2
#4: 56 : #3 and pt =(142 or 143 or 070 or 110)
#5: 26 : #1 and pt=110

Total Matches: 14
Total Records Output: 9

#1: 179,660 : pt = (142 or 143 or 110)
#2: 5,322 : km = (American Indian* or Native American* or Alaska Native* or Hawaii* or indigenous* or first nation* or aboriginal*)
#3: 32,145 : km = (language* or culture*)
#4: 275 : #1 and #2 and #3

Total Matches: 233
Total Records Output:60

This search resulted in 43 hits combining terms related to language learning (foreign language learning or bilingual education or language proficiency or language development) with terms related to indigenous peoples (Alaska Natives or Indigenous Peoples or Native Americans or American Indians or Hawaii Natives or Maori or Aboriginal or First Nations).

5.2 ERIC

Descriptors.

DE: American Indian Education
DE: Native Language Instruction

SO: Journal of American Indian Education
SO: Bilingual Research Journal
SO: Journal of Navajo Education
DE: Native Language Instruction **or** American Indian Education **and** Bilingual.
KW: Academic Achievement **and** Culture **and** American Indian

6. Psychological Abstracts (PsycINFO)

Indexes approximately 1,300 journals, books, book chapters, and dissertations; covers the field of psychology and related disciplines. Comprehensive and international in scope. Indexes materials in 27 languages from 46 countries. About 11 percent of the items indexed are not in English.

Descriptors. "Cultural Identity" or "Multicultural Education" or "Ethnic Identity" or "Bilingualism" or "Bilingual Education"

"Educational Attainment" or "Educational Programs" or "Academic Achievement" or "Grades (Scholastic)" or "Dropouts"

"American Indians" or "Alaska" or "Eskimo"

6.1 PsychINF0

Descriptors.

Educational Programs
Educational Program Evaluation
Ethnic Identity
Language Proficiency
Bilingual Education
Bilingualism
Academic Achievement
English as Second Language
Foreign Language Education
Foreign Language Learning
Foreign Languages
Classroom Environment
Elementary School Students
Junior High School Students
Academic Achievement
Special Education Students
Bilingualism

7. Office of Educational Research & Improvement (OERI) sources included the following:

www.ed.gov/offices/OERI/At-Risk/

www.ed.gov/offices/OERI/delssc.html

www.ed.gov/offices/OERI/nlp.html - National Literacy Panel

8. OhioLINK Research Databases [databases@olc3.ohiolink.edu] PsycINFO - 43 Marked Records; Sociological Abstracts - 14 Marked Records; Sociological Abstracts - 4 Marked Records.

9. Wilson Social Sciences Index (journals in anthropology, area studies, communication, economics, ethnic studies, geography, human services, international relations, law, police sciences, political sciences, population studies, psychiatry, psychology, public administration, public health, social work, sociology, women's studies.

Descriptors. <and>((<near>((<phrase>(American, Indian))<or>(<phrase>(Alaska, Native))<or>(<phrase>(Canada, Native))) <in> ALL),(<near>((<near>(academic, achievement))<or>(<near>(education, attainment))<or>graduation) <in> ALL),(<near>((<near>(Indian, language))<or>(<near>(oral, tradition))<or>(spirituality)<or>(culture)) <in> ALL),<yesno>(<and>(y <in> pri))) (196)

9.1 Social Sciences Index (Wilson Web)

Indexes articles (from 1983 to the present) on all areas of the social sciences.

Subjects covered include anthropology, area studies, communication, economics, ethnic studies, geography, human services, international relations, law, police sciences, political sciences, population studies, psychiatry, psychology, public administration, public health, social work, sociology, women's studies.

Descriptors. (<phrase>(American Indian))<or>(<phrase>(Alaska Native))<or>(<phrase>(Canada Native))) <in> ALL) (((<near>(academic, achievement))<or>(<near>(education, attainment))<or>graduation) <in> ALL) (((<near>(Indian, language))<or>(<near>(oral, tradition))<or>(spirituality)<or>(culture)) <in> ALL) (PEER_REVIEWED = YES)

9.2 Sociological Abstracts/**scripts/access-info.html?id=10**

Indexes articles in sociology and related disciplines from 1963 to the present.

Areas covered include anthropology, criminology, demography, education, gerontology, mental health, minority studies, political science, public health, social psychology, social work, urban studies, welfare programs, and women's studies.

Covers about 2,600 journals in 30 different languages from 55 countries. Also includes books, conference papers, and doctoral dissertations.

Descriptors. "Cultural Identity" or "Multicultural Education" or "Ethnic Identity" or "Bilingualism" or "Bilingual Education"

"Educational Attainment" or "Educational Programs" or "Academic Achievement" or "Grades (Scholastic)" or "Dropouts"

"American Indians" or "Alaska" or "Eskimo"

9.3 Sociological Abstracts

KW: Bilingual **and** Education **and DE:** American Indians.

Descriptors.

Hawaii
Indigenous Populations
Educational Policy
Multicultural Education
Second Language Learning
Teaching Methods
Communication(s)
Amerindian Languages
Language
Language Maintenance
Language Usage
Language Shift
Bilingualism
Indigenous Populations
American Indians

10. Miscellaneous:

http://www.ncela.gwu.edu/ncbepubs/reports/bestevidence/index.htm

http://www.brf.org/schools/hs/depts/Social%20Studies/socialstudies.htm

http://www.wested.org/policy/pubs/fostering/

http://www.aaanet.org/cae/aeq/

http://www.oiep.bia.edu/faqs_reportcards.html

http://www.indianeduresearch.net/edorc01-11.htm http://www.goodschools.gwu.edu/

http://www.nwrel.org/comm/direct.html

Appendix II: Annotated Bibliography of the Research Literature on Culturally Based Education (CBE) Programs Serving Native American Students[49]

Adley-SantaMaria, B. (1997). *White Mountain Apache language: Issues in language shift, textbook development, and native speaker-university collaboration.* Unpublished manuscript, Northern Arizona University, Flagstaff. (ERIC Document Reproduction Service No. ED415070)

This paper is an overview of topics covered at two sessions of the Fourth Annual Stabilizing Indigenous Languages Symposium, from the perspective of a native speaker of an indigenous language and member of a university academic community. The first section describes a Master's thesis on White Mountain Apache (WMA) language shift. Interviews with 60 adults aged 18–91 on the WMA reservation found that Apache was spoken by 88 percent of those aged 30 and older and by only 28 percent of those younger than 30. Although all respondents respected Apache language and culture, language preservation was being adversely affected by changes in values, particularly those resulting from Protestant missionary teachings against traditional spiritual beliefs and ceremonies. Recommendations are offered for further research on WMA language issues. The second section briefly discusses typical conflicts between U.S. public education and traditional indigenous teachings and suggests the need for parents, communities, tribes, schools, and universities to collaborate for restoration of indigenous languages and cultures in a sustained and mutually supportive relationship. The American Indian Language Development Institute exemplifies such a "collaboration." The third section discusses the role of university-based linguists in language renewal, describes the collaboration with a linguist on Western Apache textbook development and shared areas of disagreement on materials development, and points out the advantages of various language teaching methods and strategies.

Agbo, S. (2001). Enhancing success in American Indian students: Participatory research at Akwesasne as part of the development of a culturally relevant curriculum. *Journal of American Indian Education*, *40*(1), 31–56.

Participatory research by the State University of New York at Potsdam and the Mohawk Nation involved community discussion groups, which established needs for bicultural education for Indian students, the use of Mohawk culture as the arena for curriculum development, development of Mohawk cultural standards, and teacher training in Mohawk culture.

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[49] Symbols key: * (Original Bibliography); # (Experimental research design); ^ (Items added after 12/3/02)

Aikenhead, G., & Huntley, B. (1999). Teachers' views on Aboriginal students learning western and Aboriginal science. *Canadian Journal of Native Education, 23*(2), 159–175.

Surveys and interviews with 42 science teachers of Aboriginal students in northern Saskatchewan examined teacher attitudes toward Western science and Aboriginal knowledge and their practices that integrated the two cultures. Barriers to accommodating both Western and Aboriginal science cultures in the classroom were found to be conceptual, pedagogical, ideological, psychological, and practical.

*Alaska Native Knowledge Network. (1998). *Alaska rural systemic initiative: Year three annual progress report, December 1, 1997–November 30, 1998.* Fairbanks, AK: University of Alaska. (ERIC Document Reproduction Service No. ED443603)

The Alaska Rural Systemic Initiative (AKRSI) was established in 1994 to develop pedagogical practices that incorporate the Indigenous knowledge systems of Alaska Native peoples into formal educational programs. The statewide project is organized around five initiatives, each of which is implemented in one Native cultural region at a time on a rotational schedule over five years. A sixth initiative focuses on developing a statewide educational telecommunications infrastructure. This report addresses questions associated with the following six "drivers": (1) implementation of comprehensive, standards-based curricula, including assessment, in every classroom and learning experience provided through AKRSI; (2) provision of high-quality mathematics and science education and preparation and support of teachers; (3) convergence of all resources that support science and mathematics education into a focused, continuously improving program; (4) generation of parent and community support for the program based on presentations, evidence, and critical discussions; (5) accumulation of evidence that the program is enhancing student achievement in science and mathematics; and (6) improvement in the achievement of all students, including those historically underserved. During the first three years of implementation, AKRSI schools showed a net gain relative to non-AKRSI schools in mathematics achievement scores and dropout rates.

*Alley, R.D., Davison, R.G., Kelley, W.T., & Kimble, R.L. (1974). A reading improvement strategy. *Journal of American Indian Education, 13*(2), 14–20.

A report of the Title I, Elementary and Secondary Education Act, reading improvement project at the Chilocco Indian School (Oklahoma) is presented.

*American Institutes for Research in the Behavioral Sciences. (1971). *Model programs: Reading. Remedial reading program, Pojoaque, New Mexico.* Palo Alto, CA: Author. (ERIC Document Reproduction Service No. ED053890)

The elementary school in Pojoaque, New Mexico, has recently developed a remedial reading program for children in grades two to four. Eighty-three children participated in 1969–1970. As the population of the area is 76 percent Spanish American, 12 percent Indian, 12 percent white, and less than 1 percent African American, work in the program focuses on language and communication problems. Children work in remedial reading groups 25 to 30 minutes daily. Activities are divided between individual and small-group work. Textbooks and workbooks are used for skill development, and high interest library books, filmstrips, and a tape recorder are used for motivating pupil interest. Pretest and posttest scores on the Gilmore Oral Reading Placement Test, administered primarily for individual diagnosis, indicated that the months of progress in accuracy and comprehension generally exceeded the number of months the children spent in the program. References and a list of materials used are included.

*Anderson, S.H. (1987). Discourse performance of Native Indian students: A case study with implications for academic instruction. (Doctoral dissertation, University of British Columbia, Canada, 1987). *Dissertation Abstracts International, 49*(05), 1078.

The oral and written discourse performance of eight underachieving Native American high school students was assessed through individual, interactive talk-write sessions. Four male and four female urban high school students, who came from different Native cultural backgrounds but had similar histories of family instability, took part in interactive talk-write sessions on two narrative and two academic topics. Contrary to findings with non-Natives, and despite difficulties with writing processes, these subjects were more comfortable with written performance than oral performance. Most of their writing difficulties were related to the demands of academic discourse, and it appeared that the talk-write process helped the students to think through and present their arguments with a better understanding of academic discourse.

*Ayoungman, V. (1991). Siksika language renewal efforts: A description and assessment. (Doctoral dissertation, Arizona State University, 1991). *Dissertations Abstract International, 52*(04), 1188.

The Siksika (Blackfoot) of southern Alberta, Canada, responded to the endangerment of their aboriginal language with various school and community language revitalization efforts. Multiple assessments of the impact of these efforts were carried out. Language proficiency scores of elementary students showed some improvement related to the language revitalization efforts but were not high enough for the students to be considered speakers. Other data revealed positive affects on students, homes, schools, and the community. A survey of language use in households and the community and of the importance placed on Siksika and English showed that the status of the aboriginal language had also improved.

Ayoungman, V. (1995). Native language renewal: Dispelling the myths, planning for the future. *The Bilingual Research Journal, 19*(1), 183–187.

Examines the myths surrounding the introduction of Native language instruction in American Indian communities. Despite the concerns of many parents, such instruction does not "hold back" students and, in fact, empowers them to succeed in school. Parent-community involvement is essential for dispelling myths and for reinforcement of the Native language at home.

Bacon, H.L. (1980). A comparative study of achievement test scores between bilingually instructed and non-bilingually instructed Cherokee Indian students (Doctoral dissertation, University of Oklahoma, 1980.) *Dissertation Abstracts International, 41*(02), 514.

A controlled number of linguistically deprived Cherokee Indian children living in rural northeastern Oklahoma Indian communities have receive bilingual instruction through the Cherokee Bilingual Education Program. This instruction has been continuous for periods varying from two to five years depending on the project school. There has been a need for a study that would determine if Cherokee Indian students who received bilingual instruction improved significantly in specific academic areas after an intermediate period of time as compared to a comparable group of Cherokee Indian students who did not received bilingual instruction. The purpose of this study was to determine if the eighth-grade reading and mathematics achievement scores of Cherokee Indian students who received bilingual instruction in grades one through five were significantly different from the eighth-grade reading and mathematics achievement scores of comparable eighth-grade Cherokee Indian students who did not receive bilingual instruction. A secondary purpose of this study was to determine whether the eighth-grade reading and mathematics achievement scores of five-year bilingual education participants were significantly different from the reading and mathematics achievement scores of four-year bilingual education participants. The subjects selected for this study were divided into two treatment groups and one control group. The 17 subjects in the first treatment group were Cherokee Indian students who received bilingual instruction through the Cherokee Bilingual Education Program for five consecutive years. The 18 subjects in the second treatment group were Cherokee Indian students who had received bilingual instruction through the Cherokee Bilingual Education Program for four consecutive years. The subjects in the two treatment groups comprised nearly 100 percent of the population who participated in the Cherokee Bilingual Education Program for four or five consecutive years. The 18 subjects in the control group consisted of comparable Cherokee Indian students who had not received bilingual instruction. The analysis of covariance was selected as the primary statistical technique, since it allowed one to test for mean differences between the groups with respect to relevant variables. The seven dependent variables used in the analysis were age, sex, I.Q., grade point average, speaker of Cherokee, degree of Indian blood, and father's educational level. The two independent variables used in this study were reading and mathematics achievement mean scores. The results of the analysis revealed that both treatment groups made significant gains over the control group in reading and mathematics achievement at the .05 level of confidence. A comparison of the adjusted mean scores indicated that there was no significant difference at the .05 level of confidence between the two treatment groups in reading and mathematics achievement. The conclusion derived from this study was that the linguistically deprived Cherokee Indian students need to receive bilingual instruction in order to improve their reading and mathematics achievement. It was also concluded that four consecutive years of bilingual instruction is as effective with linguistically deprived Cherokee Indian children as five consecutive years of bilingual instruction.

Bacon, H.L., Kidd, G.D., & Seaberg, J.J. (1982). The effectiveness of bilingual instruction with Cherokee Indian students. *Indian Education, 21*(2), 34–43.

Determines that the eighth-grade reading and mathematics achievement scores of Cherokee Indian students in Oklahoma improve for those receiving four to five years of bilingual instruction. Makes five recommendations for further study and implementation of bilingual education; appends tables of statistical findings.

*Ball, J., & Pence, A. (2001, April). *Constructing knowledge and training curricula about early childhood care and development in Canadian Aboriginal communities.* Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA. (ERIC Document Reproduction Service No. ED451995)

The Meadow Lake Tribal Council (MLTC) (Saskatchewan) and the University of Victoria (British Columbia) developed a bicultural postsecondary training curriculum in early childhood care and development that incorporated both Euro-Western and Aboriginal knowledge. Since the MLTC sought curricula using representative Cree and Dene cultures rather than generic pan-Aboriginal culture, seven groups of Aboriginal communities partnered with the university to co-construct a two-year curriculum delivered entirely in their communities. Tribal elders played key roles in developing the curriculum. A steering committee in each community had responsibility to raise funds; recruit instructors, students, elders, and practicum supervisors; and provide facilities and supports for teaching and learning. Four of the community groups were able to recruit Native American instructors. A two-year evaluation using interviews, questionnaires, focus groups, participant observations, community forums, and record reviews was completed in 2000. Positive program impacts included unprecedented high rates of Aboriginal student retention, program completion, leadership, and application of training to relevant vocations within their communities; revitalization of intergenerational relationships through tribal elders' involvement in curriculum construction, teaching, and learning; enhanced community cohesion; and reinforcement of valued cultural concepts and practices.

*Baratz-Snowden, J., Rock, D., Pollack, J., & Wilder, G. (1988). *The educational progress of language minority children: Findings from the NAEP 1985–86 special study.* Princeton, NJ: National Assessment of Educational Progress. (ERIC Document Reproduction Service No. ED299839)

From 1985 to 1986, the National Assessment of Educational Progress (NAEP) conducted a special survey of reading and mathematics performance of language minority Asian American, Hispanic American, and Native American children to determine the progress of these children at grades three, seven, and 11. The study also sought to identify whether the differences in achievement within and among the groups could be at least partially explained by differences in demographic background, language use and competence, attitudes and school-related behaviors, and school experiences. Three achievement measures were examined, including academic performance as measured by seventh- and 11th-grade students' self-report of grades in school; NAEP reading scores for seventh-graders; and NAEP math scores for third-, seventh-, and 11th-grade students. Factors relating to the students' self-reports of high grades and to students' tested reading and math scores indicated that frequency of second language use in the home had a significant positive relationship to grades in the total sample, as did English competence, and locus of control, English competency, and positive attitudes toward reading tended to be important explanatory variables of reading performance, but that frequency of second language use in home had little or no relationship to reading performance. Sample NAEP reading and math test items are appended.

Barnhardt, C. (1994). Life on the other side: Alaska Native teacher education students and the University of Alaska-Fairbanks. (Doctoral dissertation, University of British Columbia, Canada, 1987). *Dissertation Abstracts International, 49*(05), 1078.

The thesis identifies factors that have contributed to the academic success of Alaska Native teacher education students who graduated from the University of Alaska-Fairbanks (UAF) between 1989 and 1993. It contains a brief history of schooling for Alaska Native peoples; a description of the programs, student services, and academic coursework at UAF designed to respond to the interests and needs of Alaska Native students; and a review and analysis of the experiences of 50 Alaska Native teacher education graduates based on data obtained through interviews, review of student records, and participant observation. Five factors were identified as contributing to students' academic success: a teaching and learning environment responsive to the interests and needs of culturally diverse students; student support services respectful of the interests and needs of culturally diverse students; strong family and community support; supportive prior school and life experiences; and exceptional individual efforts. The data indicate that accommodation and adaptations by both the students and the institution were essential to student success. Appendices describe 27 programs and services that address Alaska Native peoples and issues at UAF, and list Alaska Native and rural undergraduate courses at UAF, student database variables, and interview themes. (Contains 259 references.)

*Barnhardt, C. (1999). *Kuinerrarmiut Elitnaurviat: The school of the people of Quinhagak.* [Case study.] Portland, OR: Northwest Regional Educational Laboratory; & Fairbanks, AK: University of Alaska. (ERIC Document Reproduction Service No. ED437252)

As part of a larger study of systemwide educational reform in rural Alaska, this case study examines recent efforts by the people of Quinhagak to integrate Yup'ik language, values, and beliefs into school practices and policies. Quinhagak is a Yup'ik Eskimo community of 550 people on the southwest coast of Alaska. Nearly all residents can communicate in both Yup'ik and English. The K–12 school enrolls about 140 students. A brief history of the community and its schools is drawn from the experiences of an elder and her descendants. As a participant in Alaska Onward to Excellence (AOTE), a district-driven reform process implemented around the state, the Quinhagak community leadership team developed an AOTE action plan that encompassed 10 statements of values and beliefs, a mission statement, and one student learning goal of communicating more effectively in Yup'ik. With that, the team decided upon two areas of study: community involvement in schooling decisions, and \ the contribution of Yup'ik proficiency to overall student achievement. The case study gathered information on school organization; elementary and secondary facilities, personnel, and curriculum; special education and discipline programs; parent and community involvement; and assessment. Evidence of changes and trends is listed. Final comments summarize factors contributing to community choices for its school, factors enabling the school to implement new and self-determined educational priorities and challenges to narrowing the school-community gap and approving achievement. Appendices include school district statistics, school documents, and related publications. (Contains 14 references.)

*Barnhardt, R. (1990). Two cultures, one school: St. Mary's, Alaska. *Canadian Journal of Native Education, 17*(2), 54–65.

Describes the successful school serving preschool through 12th grade in St. Mary's Alaska--a small Yup'ik community. Examines the bilingual curriculum, strong community support, and the school's philosophy and goals emphasizing integration of Yup'ik ways and values and the educational responsibility of the community.

Batchelder, A. (2000). Teaching Dine language and culture in Navajo schools: Voices from the community. In J. Reyhner, J. Martin, L. Lockard, & W.S. Gilbert (Eds.), *Learn in beauty: Indigenous education for a new century* (pp. 1–8). Flagstaff, AZ: Northern Arizona University. (ERIC Document Reproduction Service No. 445864).

Since 1984 the Navajo Nation has mandated instruction in Navajo language and culture in K–12 schools within its boundaries. In 1998–1999, a survey and follow-up interviews with 48 individuals in 20 Navajo communities examined community attitudes and beliefs about the value of Navajo language and culture studies and the extent to which the schools should be involved in such instruction. Across the reservation, attitudes varied greatly with regard to which aspects of Navajo culture should be taught in school, who should be responsible for teaching Navajo language and culture, what level of Navajo fluency students should achieve, and how much of the school day should be devoted to Navajo language and culture. Respondents' attitudes were related to age, personal experience with schooling, and the size and location of the community in which they lived. Those who felt that schools should not teach language and culture were generally in one of three groups: elders and other traditionalists who felt that schools could not appropriately teach sensitive aspects of Navajo culture, those who thought that the role of school was to help the Navajo Nation move into the future, and those who did not trust the schools based on bad personal experiences.

*Beauvais, F., Chavez, E.L., Oetting, E.R., Deffenbacher, J.L., & Cornell, G.R. (1996). Drug use, violence, and victimization among white American, Mexican American, and American Indian dropouts, students with academic problems, and students with good academic standing. *Journal of Counseling Psychology, 43*(3), 292–299.

A survey of 1,052 Mexican American, 504 American Indian, and 459 white adolescents found that dropouts were most likely to be involved with drugs, perpetration of violence, and victimization by violence, while students in good academic standing were least likely to have such involvement. Students in poor standing were intermediate in involvement. Differences between dropouts and student groups were similar across ethnic groups. (Contains 27 references.)

*Bennett, R. (1987, March). *Cooperative learning with a computer in a native language class.* Paper presented at the Association of California State University Professors' Conference on the Use of Personal Computers in Higher Education: Excellence in Education, San Diego, CA. (ERIC Document Reproduction Service No. ED320709)

In a cooperative task, American Indian elementary students produced bilingual natural history dictionaries using a Macintosh computer. Students in grades three through eight attended weekly, multi-graded bilingual classes in Hupa/English or Yurok/English, held at two public school field sites for training elementary teaching-credential candidates. Teams of three students worked together at the computer to complete a dictionary page, a task involving selection of a natural item, formulation of its definition, transcription in the Unifon alphabet, translation to English, and page layout. The project focused on written sentence construction and oral communication skills. The goal of producing a dictionary dealing with plants and animals known to local tribes allowed students to use knowledge obtained from family and other tribal members. The computer provided concrete realization of abstract concepts and a self-directed interactive learning environment. Classroom observation showed that (1) students worked on the project willingly for the entire school year; (2) students' oral communication skills, used in the cooperative learning groups, developed over the year; (3) students tended to build on the work of other students; (4) older and younger students differed in their ways of viewing the natural world; and (5) older students advanced from producing literal English translations to making "good" free translations. The success of this project points to the importance of implementing a teaching methodology compatible with the learning style of the home culture. (Contains 26 references.)

Bergstrom, A., Cleary, L.M., & Peacock, T. (2003). *The seventh generation: Native students speak about finding the good path.* Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools.

BlueArm, M. (2002). Assessing Lakota language teaching issues on the Cheyenne River Reservation. In B. Bumaby & J. Reyhner (Eds.), *Indigenous languages across the*

community (pp. 161–174). Flagstaff, AZ: Northern Arizona University. (ERIC Document Reproduction Service No. ED462243)

A study examined community attitudes concerning Lakota language instruction in the schools on the Cheyenne River Sioux Reservation in South Dakota. Surveys were completed by 88 Native American, white, and mixed-heritage households. Results indicated agreement with the establishment of intensified Lakota language education for all school levels on the reservation. The majority of respondents who agreed with expanded Lakota language education were 40–50 years old--the age group that holds most decisionmaking positions within the tribal government. Respondents indicated a slight preference for bilingual education over immersion programs. Research suggests that immersion classrooms result in the quickest and most complete language learning in young children. Therefore, it is suggested that residents be informed of these findings to ensure increasing support for immersion programs. As the second choice, immersion still received enough positive responses to make a pilot project in Head Start and the lower elementary level a likely success. Re-vernacularizing Lakota will require tremendous effort by every community member in addition to implementing immersion programs in schools. English should be inaccessible in certain contexts. Ideally, there should be whole buildings and events where only Lakota is spoken. People should voluntarily ban television and other forms of modern media from their homes, at least for certain hours or contexts. Other language maintenance strategies are suggested. An appendix presents the survey.

*Boloz, S.A., & Varrati, R. (1983). *Apologize or analyze: Measuring academic achievement in the reservation school.* Unpublished manuscript. (ERIC Document Reproduction Service No. ED232817)

Three variables—student attendance, stability of enrollment, and socioeconomic status—can affect reservation students' performance on standardized tests as significantly as the quality of instruction. To test the impact of the three variables on academic achievement, the Ganado (Arizona) Unified School District No. 20 analyzed available information on six academic subtests for a representative sample of its reservation student population in grades three, six, eight, and 12. Socioeconomic status was the most consistent variable, showing a strong relation to academic achievement in all test areas for all grades except 12. Attendance had a significant effect on language and reading scores of students in grades six, eight, and 12. Attendance was also a significant variable for students of low SES, as was stability of enrollment. In general, students with stable enrollment in grades six, eight, and 12 outperformed transient students in language areas. Overall, students with the best scores were those with the best attendance records who had been enrolled consistently in the district. Evaluators felt that these results proved the quality of the district's program. Variables such as one-parent homes, negative parental attitudes, and school expectations can also affect attendance and performance, and should be investigated.

Bowker, A. (1993). *Sisters in the blood: The education of women in Native America.* Newton, MA: Women's Educational Equity Act Publishing Center. (ERIC Documentation Reproduction Service No. ED363486)

An in-depth study examining the social environment of education and its role in the lives of young Native American women. Research and interviews were conducted with 991 Indian women in order to investigate their culture and struggles in the education system. The two main purposes of the study were to identify factors that resulted in leaving school prematurely. Participants were categorized according to level of education achieved and ranged in age from 17 to 36. The participants were females who either had or should have graduated from high school during a 15-year period between 1971 and 1986. The dropout rate was estimated to be 36 percent. The results of the study showed that the problem of Native American females dropping out of school is a multifaceted problem. However, one of the most important points to remember is that dropping out was not attributed to the lack of ability to learn. One of the main factors that dropouts interviewed cited was uncaring and insensitive teachers. Many of the women reported negative experiences with their teachers ranging from blatant displays such as insults, humiliation, racism, prejudice, and sexual abuse, to more indirect displays, such as playing favorites, body language, and facial expressions that portrayed negative feelings. Other factors included having a caring adult role model, effective teachers, low family stress, and a strong sense of spirituality.

*Brancov, T. (1995). Cooperative learning in mathematics with middle school Indian students: A focus on achievement and on-task behavior (Doctoral dissertation, University of South Dakota, 1994). *Dissertation Abstracts International, 55*(11), 3396A.

A study examined the effects of cooperative learning in mathematics on American Indian middle school students' achievement, time on task, and classroom environment. A quasi-experimental design was established using 129 Indian middle school students and two teachers on a South Dakota Indian reservation. Pretests/posttests revealed that compared to controls, the cooperative learning group showed improvements in mathematics achievement, specifically problem solving; attitudes toward mathematics; and classroom climate. No differences were found in time on task

Brandt, E.A. (1992). The Navajo area student dropout study: Findings and implications. *Journal of American Indian Education, 31*(2), 48–63.

The Navajo Area Dropout Study was developed to help better understand the situation for Navajo students and to explore ways to reverse the trend of increasing numbers of dropouts. The study was commissioned by the Navajo Division of Education (NDOE), and had several main objectives. Among the objectives was to identify who drops out, how many drop out, what the main reasons are, and how the students can be tracked more effectively. The study also examined what could be done about the problem. The study included 889 students, among them 670 "stayers" and 219 "leavers." According to the study, the estimated dropout rate was 31 percent, with a transfer rate of 30 percent. There was great difficulty experienced in achieving an accurate dropout rate because school records from which the dropout rate was calculated were often incomplete and it was difficult to tell if a student had dropped out or simply transferred to another school. There were large gaps between reasons students gave for dropping out and the views of school administrators on the causes of dropping out. Students cited boredom, problems with other students and teachers, grade retention due to absenteeism, and pregnancy/marriage as the most important reasons for leaving school. Administrators' opinions focused on students' lack of interest, poor academic performance, lack of family support, and family problems. Dropouts were much more likely to live farther from school and not have their own transportation. This report was published in 1986.

^Brenner, M.E. (1998). Adding cognition to the formula for culturally relevant instruction in mathematics. *Anthropology & Education Quarterly, 29*(2), 214–244.

Although equity is one of the goals of the mathematics reform movement, there has been little research done to develop programs that meet the needs of specific cultural groups. By studying how mathematical knowledge is developed in the course of everyday life, it is possible to change mathematics instruction to enhance mathematical achievement. In a series of research projects with Native Hawaiian children, ethnographic information and cognitive studies of mathematical thinking guided a program to develop culturally relevant mathematics teaching. The approach taken in this study is compared to other recent efforts to develop culturally relevant instruction in mathematics. This article reports on a program of research in which the author and her colleagues combined social and cultural theory to improve mathematics instruction for Native Hawaiian children enrolled in the KEEP program through ethnographic, cognitive, and pedagogical research.

Brod, R., & McQuiston, J.M. (1997). The American Indian linguistic minority: Social and cultural outcomes of monolingual education. *American Indian Culture and Research Journal, 21*(4), 125–159.

This article explores the extent of English and non-English language use, ability, and understanding among American Indians and Alaska Natives as children and as adults adapting to a mono-English education system and the impact of these factors on literacy levels and educational outcomes. Implications are drawn for bilingual education programs and cultural transmission among Indian Americans. Specifically, early bilingual instruction is argued to be crucial for the success of linguistic and cultural transition. Data collected as part of the first and only national survey of Indian adult education and literacy show that although one out of four adult Indians normally speak a non-English language to carry out their daily activities, only 5 percent were able to use that non-English language in school. Currently, few teachers are capable of teaching in the traditional tongue. Nearly half of Indian Americans were educated in schools that provided education solely in English. Regional differences in educational attainment and proficiency are described and compared among groups as graded by English language proficiency. These comparisons show conclusively that the failure of the educational system to provide primary-level bilingual education is a major barrier to educational success among American Indian and Alaska Natives, particularly those in the West.

*Brown, J.R. (1994). Upward Bound at Northern State University: A characteristic analysis of successful participants, 1977–1985 (Doctoral dissertation, Northern Arizona University, 1993). *Dissertation Abstracts International, 54*(11), 4012A.

A study examined the characteristics of successful and unsuccessful Native American and non-Native secondary students who participated in the Northern Arizona University (NAU) Upward Bound program during 1977–1985. The study also looked at the academic performance of participants who later enrolled as college students at NAU. No significant differences were found between the success rates of Native and non-Native students. Participants' success was influenced by total years of program participation, parents' educational and occupational levels, prior academic performance, and consistency in program personnel. Postsecondary performance was related to academic preparation, as opposed to ethnicity.

Buxton, C.A. (1999, January). *The emergence of a language of instruction for successful model-based elementary science learning: Lessons from a bilingual classroom.* Paper presented at the annual meeting of the National Association for Bilingual Education, Denver, CO. (ERIC Document Reproduction Service No. ED436957)

This paper examines the special challenges that English-as-a-Second-Language (ESL) students face in succeeding in science classrooms in U.S. schools. Particular focus is on how students in one experimental classroom (a grade two and grade three two-way bilingual English-Spanish class in a small western city) learned to apprehend scientific meaning with their peers, their teachers, and the researchers through the collaborative construction of a language of instruction for successful science learning. This was done in the context of student-generated computer models. Through active participation in the construction and use of this language of instruction, students made significant strides in acquiring ways of thinking, acting, and talking that should lead to their continued success in science. Student-generated computer models, in conjunction with the construction of physical models and other hands-on activities, can provide an effective strategy for mediating the difficulties that English language learners often have with mastering the academic discourse of science. The project goals were to help students to provide better explanations of natural phenomena, to teach them to view science as a process of inquiry rather than a body of facts, to encourage students to pursue their own understanding of scientific concepts as well as learn traditional academic concepts, and to explore the effects of modeling on the participation and success of both girls and language minorities.

Byrne, A.D. (1989). Factors affecting the academic success of Native American students who attend a public high school in Southern California (Doctoral dissertation, Northern Arizona University, 1989.) *Dissertation Abstracts International, 50*(05), 1235.

The purpose of this study was to determine factors affecting the academic success of Native American students attending a public high school in Southern California. Thirty-four students in grades nine through 12 were interviewed and administered the Piers-Harris Self-Concept Scale. At the end of the semester, school records were examined to determine the grade point average and number of units completed by each student. Eleven independent variables were tested in three major areas. The demographic factors of gender, residency on or off the reservation, parent's level of education, socioeconomic status, and participation in Indian cultural activities were analyzed. Self-concept by gender and by total score on the Pies-Harris Self-Concept Scale was measured. The third realm, school environment, consisted of attendance, membership in clubs, participation in sports, perception of prejudice, and receiving tutoring. Frequency tables were constructed. ANOVA, Spearman's rho, and Kendall's tau correlation coefficients were used to determine significance, or relationship between the key study variables and academic achievement. Statistically significant relationships were found in the following areas: education of parents, socioeconomic status, attendance, and perceived prejudice by school officials and students from other tribes. No statistical significance was found in the following areas: gender, residency, participation in Indian cultural activities, self-concept, clubs, sports, prejudice by Anglo students or other ethnic minorities, and tutoring. Included in the findings, however, was the relationship between self-concept and several variables.

*Carnew, F.I., & Clark, W.B. (1985). *Cognitive education and Native adolescents: A pilot study.* Alberta, Canada: Calgary University Instruction for Computer Assisted Learning. (ERIC Document Reproduction Service No. ED268989)

This study investigated the potential usefulness of a cognitive education intervention approach to improving learning abilities of underachieving Native adolescents. The specific variables considered were (1) the manner in which this approach may affect cognitive development, (2) academic learning, (3) attitudes toward and interest in academic subjects, and (4) teacher attitudes toward such students. Subjects included 56 Native Cree Indian adolescents who were assigned to experimental (N = 38) and control (N = 18) groups based on their need for remedial or regular instruction respectively. Pretests were administered to identify underdeveloped cognitive functions and computer literacy was assessed via a computer awareness questionnaire. The experimental group received the intervention program, which comprised an introductory LOGO computer language component; an extended computer component; and reading, writing, and mathematics components. Posttests were then administered to both groups and an analysis of variance was conducted to determine the significance of any differences between the experimental and control groups. Results indicated that involvement in the intervention program did positively affect the experimental subjects' cognitive functioning abilities and improve their achievement in reading and writing; however, teaching for transfer of cognitive functions neither affected the students' attitudes toward academic subjects nor improved their achievement in mathematics. An extensive bibliography is provided, and copies of the computer awareness questionnaire, parent permission slips, and tables of contents for the program components are appended.

Chan, K.S., & Osthimer, B. (1983). *Navajo youth and early school withdrawal: A case study.* Los Altimos, CA: National Center for Bilingual Research. (ERIC Document Reproduction Service No. ED240414)

This report presents the findings from a case study of Navajo youth. The case study explored the problems that Navajo youth face that contribute to their high dropout rates from school, particularly high school. The students followed were high school students from the class of 1982. Of that class, 20 percent dropped out early, 43 percent transferred or were otherwise "lost," and 37 percent graduated. The study focused on five explanatory hypotheses and applied them to a mixture of Navajo youth who came from similar "high-risk" backgrounds. The Navajo youth were included dropouts, graduates with no future educational plans, and graduates who were college-bound. The five hypotheses included: 1) Navajo youth from non-English language backgrounds drop out of high school at higher rates than other Navajo youth; 2) "Traditionalism" negatively influences school outcomes; 3) Critical markers can be identified in the educational experiences of Navajo students, which distinguish dropouts from graduates; 4) The distance that Navajo youth travel from school influences their school outcome; and 5) Dropouts, graduates, and college-bound students differ in their orientation toward the future. The results of case studies did not provide definitive conclusions, but did reveal problems that may be of interest to school policymakers. With respect to language background, it appeared that students who acquired and used English at home were less at risk of dropping out. In addressing the second hypothesis, it was found that the traditionalism played no role in influencing school outcomes. Also, the study was unable to establish any critical markers that could lead to identifying troubled Navajo youth early on in the educational process. The authors of the study noted that one major factor that might help establish critical markers is an improved and coordinated system of record keeping between the various authorities in control of Native American education. The results for hypothesis four, which dealt with distance from school, showed that transportation problems and long commutes to school were a major hindrance to all Indian students, not just dropouts. Finally, the future orientation of college-bound graduates featured more concrete plans and a realization that their actions would determine future results. In contrast, dropouts had no future plans, and seemed to have trouble linking their actions to the circumstances of their lives.

Chavez, G.T., & Arreaga-Mayer, C. (1987, March). *Ecobehavioral variables within a classroom with limited English proficient students.* Paper presented at the annual meeting of the National Association for Bilingual Education, Denver, CO. (ERIC Document Reproduction Service No. ED336962)

The study analyzed the effects of classwide peer tutoring on science vocabulary spelling achievement for three language groups in one school's sixth grade. The groups consisted of Spanish-dominant and limited-English-proficient (LEP) students (n = 8); students proficient at grade level in both Spanish and English (n = 14); and monolingual English speakers (N = 5). For comparison of weekly spelling gains, the second and third groups were combined as one non-LEP group. Experimental stimuli were drawn from the sixth-grade science text. Results of weekly spelling pre- and posttests demonstrated that the peer tutoring procedures resulted in gain scores for the three language groups. In addition, the Spanish-dominant LEP group made greater gains when compared to the non-LEP group. Implications for the design and implementation of peer tutoring programs for LEP students are discussed. An 11-item bibliography is included.

Clark, A.S. (1994). *OERI Native American youth at risk study.* Bozeman, MT: Montana State University. (ERIC Document Reproduction Service No. ED373951)

This report examines personal, cultural, school, and family factors that contribute to the decision of American Indian students to remain in school until graduation or to drop out. A 140-item questionnaire, the Native American School Study, was completed by 165 participants who had either graduated or dropped out of school during 1989–1991. Respondents lived on reservations in Montana, North Dakota, and South Dakota. In addition, 76 graduates and 37 dropouts were interviewed at length. Factors examined in the questionnaire and interview included substance abuse by self or family members, peer pressure, trouble with the law, self-esteem, teen pregnancy, family structure, socioeconomic status, parent education, academic achievement, teacher attitudes and expectations, school attendance, abuse by school personnel, tribal self-identity and pride, discrimination and racism, and bilingualism. Results indicate that respondents who dropped out of school demonstrated significant differences from graduates in self-esteem, frequency of skipping school, teacher expectations and attitudes, and grade retention. During interviews, the themes of poverty, self-esteem, and teacher attitudes repeatedly surfaced. Graduates frequently reported that family expectations (particularly those of the mother and grandmother) kept them in school. This report contains a lengthy literature review; recommendations to educators, policymakers, parents, and Indian communities; and many references in endnotes.

*Clark, W.J. (1996). *Effect of a computer assisted instruction program on Aboriginal student achievement.* Unpublished master's thesis, Brandon University, Manitoba, Canada. (ERIC Document Reproduction Service No. ED400777)

Many parents on a southwestern Manitoba (Canada) Indian reservation are troubled by the small number of high school students who graduate. Much of the failure can be attributed to the generally poor writing skills of aboriginal students. To increase the students' writing ability, a computer-assisted instruction program emphasizing writing and thinking was implemented for students in grades seven through nine. The purpose of this study was to investigate whether students receiving computer-assisted writing instruction would outperform students receiving traditional writing instruction (using pencil and paper) on the language arts component of a standardized diagnostic test. Following a quasi-experimental design, the researcher applied both a pretest and a posttest to the experimental and control groups. Prior to the introduction of the "Knowledge Builder" writing program and again at the end of the school year, the students in grades seven through nine of two southern Manitoba Indian reserves were administered the Canadian Test of Basic Skills, and the mean scores for each grade of the two schools were compared. While the findings of this study showed no significant difference between the groups, the experimental school's teachers felt there was an overall improvement in the quality of expository writings. Thirteen tables present results of the study and descriptions and comparisons of the control and experimental groups.

*Cleary, L.M., & Peacock, T.D. (1998). *Collected wisdom: American Indian education.* Needham Heights, MA: Allyn & Bacon.

Based on interviews and classroom observation, this book presents the "collected wisdom" of 60 teachers of American Indian students in all parts of the United States, as well as teachers of indigenous students in Australia and Costa Rica. Chapter 1, "Introduction: The Teacher as Learner" presents the authors' backgrounds, the study's emerging themes, general procedures of the study, and rationale for the final presentation of data. The study was based on the premise that teachers in schools that serve Indian children should see themselves as learners who are open to understanding the reasons why children and communities are the way they are, who are willing to discover and consider the differences between school and home cultures, and who are willing to change their ways of teaching to give children a better chance in school and life. Each subsequent chapter has a theme and standard format: a story that introduces the chapter's content, questions to tap the reader's prior knowledge, a profile of a teacher-interviewee, a problematic case study, a summary of research on the theme and its implications for practice, and references. Chapter titles include the following: "Cultural Difference: Recognizing the Gap Into Which Students and Teachers Fall"; "What Has Gone Wrong: The Remnants of Oppression"; "Creating a Two-Way Bridge: Being Indian in a Non- Indian World"; "Issues of Native Language"; "Ways of Learning"; "Literacy, Thought, and Empowerment"; and "What Works: Student Motivation as a Guide to Practice." The last chapter is an epilogue, which discusses the universality of issues in indigenous education, the strength and tenacity of culture, and the need for an integrated approach to educational problems. Appendices detail the research methodology and provide questions to guide a teacher's change to authentic assessment. (Contains an index.)

*Coburn, J., & Nelson, S. (1987). *Characteristics of successful Indian students: Research and development program for Indian education.* Portland, OR: Northwest Regional Educational Laboratory. (ERIC Document Reproduction Service No. ED297909)

A survey was taken to identify characteristics of Indian students completing high school. Using the regional Indian education network, 571 surveys were mailed to 1987 high school graduates; 123 surveys were returned for a 23+ percent response rate. Responses came from public and tribal schools, urban and rural, in Oregon, Washington, Idaho, and Montana. Responses showed a variety of student types. Half the students surveyed were involved in sports, 35 percent in church activities, 25 percent in tribal activities, and 15 percent in civic organizations. Their average cumulative grade point average was 2.86. Eighty-two percent of students identified teachers as most influential in their success. Forty-seven percent also identified counselors and 39 percent identified coaches as influential. Attributes of most influential teachers included caring and positive attitudes, honesty, concern, respect, and patience. These teachers made school interesting and inspired and challenged the students, while maintaining high expectations. The most helpful teachers were those who gave help willingly, were open-minded, encouraged goal setting, were supportive when students failed, but complimented them when they did well. Half of the Indian students surveyed ascribed their motivation to finish high school to the reward of current successful experiences, including individual attention of teachers and participation in sports and other extracurricular activities. High expectations of family and friends, aspirations for a college education, self-confidence, and the negative consequences of dropping out were also cited as strong motivations. Students suggested telling other students that finishing high school is the way to future success on and off the reservation.

*Coggins, K., Williams, E., & Radin, N. (1996). *The traditional tribal values of Ojibwa parents and the school performance of their children: An exploratory study.* Ann Arbor, MI: University of Michigan. (ERIC Document Reproduction Service No. ED400116)

This study of 19 northern Michigan Ojibwa families examined antecedents to holding traditional values and the relationship between mothers' and fathers' level of holding traditional values and their elementary school children's academic and social functioning. Participating families had a child between ages three and 11 years; the focal child of the study was the oldest attending elementary school. Interviews were held individually with the 15 mothers and 14 fathers comprising the sample. Based on interview information, the interviewers completed a scale measuring the extent to which traditional values were held. Academic functioning was assessed through teacher-assigned report card grades and two Adaptive Functioning items from Achenbach's Teacher's Report Form of the Child Behavior Check List (CBCL). Social functioning was assessed by two Adaptive Functioning items from the CBCL; the Problem Behavior CBCL items; an American Indian Child Behavior Check List to assess personality traits important to American Indians; and an Index of Future Community Leadership, important in an American Indian population. Results indicated that identification with more traditional American Indian values in mothers had a beneficial impact on children's academic and social performance in school. Father's level of holding traditional values was not associated with his children's academic and social outcomes. Mother's greater adherence to traditional values was associated with higher levels of parental education and higher status parental occupation. (Contains 37 references.)

Coladarci, T. (1983). High-school dropout among Native Americans. *Journal of American Indian Education, 23*(1), 15–22.

The study of high school dropouts among Native Americans was the purpose of a practicum carried out at the University of Montana in the fall of 1980. This exercise in empirical research was requested by several educators in a Montana high school district and focused on factors contributing to the high dropout rate among Native American students. Lack of funds, personnel, and time did not allow for a formal research organization. The project staff compiled a list of 224 students who dropped out in the previous three years. A dropout rate of 60 percent was estimated by the author in his research of the area. Forty-six of the 224 dropouts were contacted and, with their consent, were interviewed regarding their reasons for dropping out of school. Each student who participated filled out a 24-item questionnaire, as well as several open-ended questions. The results showed that students placed considerable importance on the student-teacher relationship, and the failure of this relationship was a large factor in dropping out. More than one-third of the dropouts expressed the feeling that their teachers did not care about them, and did not provide enough assistance to Native students. An additional 30 percent of the dropouts felt that disagreements with their teachers were an important factor in the decision to drop out. Several other factors included lack of parental support and school not being important for what they wanted to do in life. An interesting outcome to this study is the fact that more than 90 percent of the dropouts say they would advise prospective dropouts to remain in school.

Collins, M.M. (1995). *Resiliency as a predictor of academic success for Native American high school students* (Doctoral dissertation, University of Nevada, Reno, 1995). *Dissertation Abstracts International, 57*(01), 98.

This study examined the relationship between resiliency and the academic achievement of Native American high school students in the Washoe County School District. A secondary focus of the research was to determine if a relationship existed between resiliency or academic achievement and variables including gender, age, absences, suspensions, tribal affiliation, and residency on or off the reservation. Data were collected by administering the Resiliency Belief System (Jew, 1991; Jew & Green, 1995) to 109 Native American high school students enrolled in Washoe County public schools. The Resiliency Belief System consisted of 50 items. Students were asked to read each item and rate the degree to which they agreed or disagreed with the statement. The four subscales of the instrument were labeled Active Optimism, Passive Optimism, Active Belief in Others, and Passive Belief in Others. The demographic and academic data needed for the study were provided by the Washoe County School District. Various statistical treatments which included descriptive statistics, frequency distributions, percentages, t-test, one-way ANOVA, and Pearson r product-moment correlation coefficient were applied where appropriate. Although a statistically significant correlation was found between Passive Optimism and GPA, no other significant correlations were found between resiliency scores and academic achievement. Academic achievement and resiliency scores did vary based on gender. A significant negative correlation was found between academic success and absences. Previous research suggests that there is a positive correlation between academic achievement and resiliency. This study, which involved Native American participants, did not support previous findings.

^Cottrell, M.C. (1971, February). *Bilingual education in San Juan County, Utah: A cross cultural emphasis.* Paper presented at the annual convention of the American Educational Research Association, New York, NY. (ERIC Document Reproduction Service No. ED047855)

An experimental bilingual program with a bicultural emphasis was initiated in three Utah schools to prevent retardation in academic areas by providing instruction in all subject matter areas in the native language of the child; to build a positive self-image by providing lessons on the heritage of the Navajo people and by developing a bicultural approach in which teachers furnish models of successful cultural synthesis; to develop closer communication and mutual understanding between parents and teachers; and to develop a curriculum reflecting the needs of a people with a rich cultural heritage who are forced to make accommodations to the economics of another culture. Staff training was conducted under contract with Brigham Young University using preschool and bimonthly workshops. Students participating in the program ranged from five to seven years old and were in kindergarten or first grade. Instruction in history and culture of Indians (with an emphasis on the Navajo) and the instruction of English as a second language was added to the regular district and state curriculum. Program evaluations concluded that the bilingual program was accepted with enthusiasm by parents; children in bilingual classrooms were maintaining self-images as positive as Navajo children who had been more highly integrated into the Anglo culture; and academic achievement of Navajo children in bilingual classrooms was equal to or greater than that of Navajo children living in or near Anglo communities.

Cziko, G.A. (1992). The evaluation of bilingual education: From necessity and probability to possibility. *Educational Researcher, 21*(2), 10–15.

This article discusses the evaluation of bilingual education programs, surveys the results of seven bilingual education evaluations, and presents their diverse findings. It argues that such research cannot say whether bilingual education is good or if it works. It describes a "bilingual immersion" program where language minority and majority students learn from each other.

Danyluk, R.C., and da Costa, J.L. (1999, April). *Identifying and addressing challenges encountered by educators of aboriginal children in an urban setting.* Paper presented at the annual meeting of the American Educational Research Association, Montreal, Quebec, Canada. (ERIC Document Reproduction Service No. ED429958)

This study examined challenges that Canadian educators faced when teaching Aboriginal students in a large urban school. The study involved the school's principal, teachers, counselors, and coordinators of Aboriginal student programming. Participants, who were Aboriginal and Caucasian, completed semistructured interviews that examined personal information, challenges to teaching Aboriginal students, and suggestions for improvement. Data analysis indicated that challenges were directly influenced by students, parents, educators, and administrators. Most of the challenges were task related rather than personal. Aboriginal and Caucasian respondents agreed on most of the challenges. Students' preparedness for school and inability to adapt to the school structure were challenges that were especially relevant. Participants agreed that Aboriginal students learned in unique ways which educators needed to understand and work with. Parental distrust of mainstream education was a significant challenge. Challenges related to educators and administrators were associated with lack of preparedness for diverse students, cultural conflict, and district disrespect for the school. Most of the strategies suggested by respondents treated symptoms of the challenges rather than the causes. Aboriginal and Caucasian educators developed their strategies differently. The paper makes recommendations for practice and for further research. An appendix provides the interview schedule.

*Darnell, R. (1985). The language of power in Cree interethnic communication. In N. Wolfson & J. Manes (Eds.), *Language of inequality* (pp. 61–72). Berlin: Walter de Gruyter.

This chapter examines difficulties and misunderstandings that arise in communication between Native Americans and Whites, difficulties often compounded by asymmetrical access to power. Examples are drawn from the Cree of northern Alberta (although many of these patterns are widespread in Native North America) and focus on public meetings, political decisionmaking, and interactions in the classroom. One area of miscommunication is related to cultural differences in decisionmaking and attitudes toward leadership. In the context of public meetings and decision making, Whites tend to expect speedy group decisions in which the majority rules. Native people seek consensus, which takes time; avoid confrontation by depersonalizing differences of opinion; and use mediators to effect compromises. Cultural differences in communication styles include differences in interactional timing and the ways that speakers and learners use silence or murmur acknowledgments. In traditional Cree teaching, an elder conveys his experience, often in a monologue, or a teacher demonstrates a skill. The learner has little or no input. The interaction is open-ended, as the learner is responsible for putting the teaching to effective use. Other Cree interactional practices or premises often cause conflict in the classroom. Cree do not correct a mistake directly, do not force anyone to accept teaching, do not verbalize their feelings or talk about talk, avoid direct eye contact, and regard children as autonomous persons. Some thoughts on establishing true interethnic communication are offered.

*Davis, J. (1992). Factors contributing to post-secondary achievement of American Indians. *Tribal College, 4*(2), 24–30.

Describes a study of the family and educational histories of 10 American Indian college graduates to determine factors in their success. The graduates, most of whom came from low socioeconomic and limited educational backgrounds, attributed their success to family encouragement and their personal desire for betterment.

Deyhle, D. (1992). Constructing failure and maintaining cultural identity: Navajo and Ute school leavers. *Journal of American Indian Education, 31*(2), 24–47.

*deMarrais, K. B., Nelson, P.A., & Baker, J.H. (1992). Meaning in mud: Yup'ik Eskimo girls at play. *Anthropology & Education Quarterly, 23*(2), 120–144.

Describes storyknifing, a traditional way of storytelling illustrated through pictures traced in mud, by young girls in a Yup'ik Eskimo village on the Kuskokwim River (Alaska). Storyknifing provides a forum in which young girls learn cultural and cognitive knowledge. Storyknifing maintains a link with traditional society in this village.

The author conducted a seven-year ethnographic study of Navajo and Ute youth in a border reservation community to analyze issues such as leaving school, community race relations, and academic achievement. This article specifically focuses on school dropouts. The data presented were compiled from questionnaires given to dropouts, hundreds of ethnographic interviews, and observations in schools and communities. The graduation and dropout rate in the community studied (fictitious names are used for both the community and schools) was determined by following "cohorts" of youth throughout their school careers. A total of 629 students, forming six different cohorts, from the class of 1984 to 1989, from each of two high schools ("Border High School" and "Navajo High School") are represented with complete four-year high school records. The results revealed a significantly higher dropout rate from that reported on the national or state level. Combining the data from both schools that represent the six years studied, 59 percent graduated through either traditional or nontraditional means, 34 percent left school, and 7 percent remained "unknown." However, the graduation rate of 59 percent is lowered to 49 percent when reporting only students who graduated on time in a traditional high school program. As many as 18 percent of these Indian youth were physically in school for 12 years and still did not graduate. Over half the youth who dropped out did so during the 12th grade, which indicates that many of the students showed persistence toward getting their high school degree. Also, a significant number of the graduates, 10 percent, did so only by taking additional years, or by attending alternative programs. There were differing results between the two high schools studied. The dropout rate at Border High School was 55 percent, while at Navajo High School the dropout rate was 63 percent. Navajo High School asked their dropouts to explain why they were leaving. Their responses showed a marked difficulty with schooling and an importance placed on family responsibility. More than one-third were either required to leave because of "behavioral difficulties" or left because of "an active dislike of the school experience." Another one-third left because their parents needed them for work responsibilities and to help support the family financially. Other reasons for leaving included feeling that no one cared about Indians, pregnancy, and reasons unknown.

Dick, G.S., Estell, D.W., & Sand, T.L. (1994). Saad Naakih Bee'enootiilji Na'alkaa: Restructuring the teaching of language and literacy in a Navajo Community School. *Journal of American Indian Education, 33*(3), 31–46.

The paper describes the 10-year development of the Rough Rock English-Navajo Language Arts Program (RRENLAP) to improve the teaching of language, literacy, and biliteracy. Discusses collaboration between Rough Rock and the Hawaii-based Kamehameha Early Education Program, key RRENLAP instructional features, and the role of bilingual teachers in the struggle to gain local control over community schools. Navajo bilingual teachers take charge of pedagogical transformation. Especially significant are the ways in which teachers use their own language and culture as resources to create classroom environments in which students can do the same. The process and mechanism for these types of changes are related to larger issues of bilingual/bicultural/biliteracy education in indigenous schools.

*Diessner, R., Rouscul, E.E., & Walker, J.L. (1985). English fluency via computers at Yakima tribal school. *Journal of American Indian Education, 25*(1), 17–24.

A project using Apple IIe processing stations and Apple Writer II software increased written English fluency for Native American students in grades seven through 12 at the Yakima Tribal School. Thematic maturity did not increase, and students became reluctant to do handwritten work.

*Dodd, J.M., Garcia, F.M, Meccage, C., & Nelson, J.R. (1995). American Indian student retention. *NASPA Journal, 33*(1), 72–78.

Presents results of a study undertaken to learn what academically successful American Indian students at one postsecondary school encounter and which persons and/or support services help with their academic success. Most students indicated their family was the primary support. Few reported obstacles were academic, indicating the importance of student support services.

*Dooley, M.S. (1987). *Dialogue journals: Facilitating the reading-writing connection with Native American students.* Unpublished master's thesis, Northern Michigan University, Marquette. (ERIC Document Reproduction Service No. ED292118)

Focusing on the integration of early reading and writing skills, the study examined the instructional use of daily dialogue journals during a five-month period in a class of 10 third-grade Native American students living on an Indian reservation in northern Michigan. Students were required to make an entry of at least three lines every day, all writing was confidential, and the journals were not graded. Punctuation skills, grammar, and sentence structure improved in most cases; the length of sentences and paragraphs improved in all cases. Ninety percent of the students indicated a positive feeling about writing, and a majority reported that they enjoyed sharing reading and writing with their classmates. Difficulties in using this teaching technique included the amount of teacher time spent in answering the journals on a daily basis, and the problem of motivating students to write. Overall, results indicated that the dialogue journals were successful in combining the need for a culture-based learning style, which emphasized group cooperation, and pragmatic learning based on experiences. (Examples of prewriting, a student attitude chart, a student progress chart, and 22 references are appended.)

Dyc, G. (1994). The use of native language models in the development of critical literacy. *American Indian Culture and Research Journal, 18*(3), 211–233.

English literacy is still seen as a cultural threat to Native Americans because of the conflict between the tribal members' primary home language and the secondary discourse system associated with Western European ideologies and values. The alienation of Native students can be explained by their status as an involuntary cultural minority and the use of educational techniques that bring about disempowerment--their refusal to learn may be seen as a form of political resistance. In addition, alienation can be explained by the students' experience of the profound discontinuity between language use in the school and language use in the community. Literacy programs must empower Native students through a problem-posing model that allows students to draw on their own experience and encourages interaction between students. This would result in critical writing that is moored to the cultural values and commitments of the community.

Eberhard, D.R. (1989). American Indian education: A study of dropouts, 1980–1987. *Journal of American Indian Education, 29*(1), 32–40.

The purpose of this study was to provide information to assist in categorizing Native American secondary dropouts. Four graduating classes were examined: 1980–1984, 1981–1985, 1982–1986, and 1983–1987. The students were examined on six variables, including academic achievement, family constellation, and gender. Also, examined were family mobility, school attended, and tribal affiliation. The results of the study included the finding that stayers had significantly higher GPAs than did dropouts, as well as higher Proficiency and Review (PAR) test scores. Predictably, the academic implications of this finding were that Indian pupils with low PAR scores and low GPAs were at a high risk of dropping out. The family constellation summary showed parental status having no effect on dropping out, and there was virtually no indication of more male dropouts than female dropouts, which had been the hypothesis. With regard to family mobility, dropouts moved twice as much as stayers, dropping out increased with the number of moves made, and parents and pupils confirmed the problems that moving presents for achieving in urban schools. In assessing the relationship between dropouts and stayers and what schools they attended, the study identified three of the schools as being above the dropout average.

Also, Navajo pupils dropped out less than all other tribes (Navajo, 27 percent, all others, 60 percent).

*Edington, E.D., & Pettibone, T.J. (1975). *Project HEED. Final evaluation report, 1974–1975.* Sacaton, AZ: Projects to Advance Creativity in Education. (ERIC Document Reproduction Service No. ED108791)

Project HEED's (Heed Ethnic Education Depolorization) main emphasis in 1974–1975 was to develop reading and cultural awareness skills for kindergarten through fourth grades in the seven project schools on American Indian reservations in Arizona. In its fourth year of operation, the project (funded under Elementary and Secondary Education Title III) involved 725 Indian students in grades K–3 at St. Charles Mission, Hotevilla, Sells, Rice, and Many Farms, and in K–4 at Sacaton and Peach Springs. For the project's fourth evaluation all the students were administered the pre- and posttest SRA Reading Achievement tests and the DISTAR Mastery tests. A minimum of two visits were made to all sites, except Hotevilla, during the year. Some of the project's successes were 1) significant gains were attained at all schools; 2) changes in average grade level equivalence ranged from four to seven months; and 3) in terms of national posttest norms, only one school achieved as high as the national median score of the 50th percentile. This report covers three basic areas of the evaluation: 1) reading performance by SRA (WRAT) and DISTAR Reading Mastery test; 2) development of reading objectives; and 3) cultural awareness activities. The reading scores are reported both as grade level changes and as percentile changes.

Enos, A.D. (1999, October). *Real, relevant, meaningful learning: Community-based education in native communities.* Paper presented at the annual conference of the National Indian Education Association, Oklahoma City, OK. (ERIC Document Reproduction Service No. ED443602).

The Community-Based Education Model (CBEM) at Santa Fe Indian School (SFIS) in New Mexico was studied to determine the elements that contribute to its success and might be replicated in other community education projects. The CBEM engages students and tribal communities in issues related to their environment, natural resources, and health in an attempt to stimulate high school student interest and motivation in math and science. CBEM is a partnership among students, SFIS, the Pueblo community, business, and government that meets the request of the Pueblo governors to educate students in the skills needed in the outside world and in their own traditions. Pueblo students are learning mainstream skills (math and environmental science), and they are interacting with mainstream organizations. Their work is rooted in the Pueblo community through local field experience programs on water quality, and connections are made to Pueblo culture through Pueblo community members. Program strengths include a committed, knowledgeable, energetic staff that shares a common educational philosophy supported by educational research and Pueblo ideas; a program that is responsive to Pueblo culture, traditions, and needs; cutting-edge technology available for student and community use; increased student

motivation to learn environmental science; networks between Native and mainstream science and technology organizations; and excellent documentation of the process behind the model program. Recommendations for program improvement and replication are listed.

^Erwin, B., Hopper, P.S., & Kauffman, M. (1996). Integrating art and literature through multicultural studies: Focusing on Native American Sioux culture. *Reading Horizons, 36*(5), 419–440.

Part of a special issue on reading and writing across the curriculum. Ways of integrating art and literature through multicultural studies are discussed in relation to the Native American Sioux culture. The development and teaching of a fourth-grade integrated thematic unit about the Native American culture of the Sioux were structured to reflect the levels of Bloom's Taxonomy of cognitive objectives and elements of multicultural discipline-based art education. The students applied their new knowledge by creating art and literature appropriate for the culture based on the Dream Catcher and the Iktomi story.

Fan, M. (1991). The effects of cooperative learning and tutoring on academic achievement and self-concept of Native American students (Doctoral dissertation, Northern Arizona University, 1990.) *Dissertation Abstracts International, 52*(03), 789.

The purposes of this study were a) to investigate the effects of cooperative learning with tutoring on Native American students' academic achievement and self-concept; b) to determine the Native American students' level of self-concept; and c) to investigate the relationship between self-concept and academic achievement in Native American students. One hundred thirty-five Native American sophomores and juniors participated in this study from June to July 1990. Cooperative learning was provided for the intact group in regular classroom instruction during the five-week intensive treatment period. In addition, they received tutoring both in the regular classroom and in the evening for two hours a day, four days a week. The tutor-student ratio was about one to six. Student academic performance was determined by a mathematics teacher-made test; self-concept was measured by the Culture Free Self-Esteem Inventory. All subjects were pre- and posttested, and the data were analyzed on the basis of gender, grade level, and types of schools attended using *t*-test and analysis of covariance. In addition, Pearson-r correlation coefficient was employed to determine the relationship between GPA and self-concept scores. Statistical significance was found in mathematics at .001 using *t*-test for the entire sample as well as for both genders, grade levels, and public and nonpublic school students. This indicates that cooperative learning and tutoring had a strong positive effect upon academic achievement. Analysis of covariance further revealed that all subjects performed at nearly the same level in the mathematics posttest. Student performance on the self-concept test was stable throughout the five-week treatment period. Overall, they rated themselves as intermediate (51–55 percentile) in self-esteem. Further, males and females were not significantly different in both self-concept pre- and posttest scores. Finally, no strong relationship between GPA and self-concept was detected.

*Fayden, T. (1997). What is the effect of shared reading on rural Native American and Hispanic kindergarten children? *Reading Improvement, 34*(1), 22–30.

Finds that the use of predictable Big Books in the classroom with primarily Native American and Hispanic kindergarten children and with children whose early experiences with books are limited is an effective way to develop reading skills.

*Feurer, H. (1990, May). *Multilingual education: An experimental project by the Cree Indians of Waskaganish in Quebec, Canada.* Paper presented at the International Conference on Thai Studies, Yunnan, China. (ERIC Document Reproduction Service No. ED337045)

The struggle of one Cree community, the Waskaganish (formerly called Rupert House) in Quebec, to maintain its own language and culture within the larger multicultural Canadian context has led to the creation and development of a linguistic experiment, the Cree Way Project. After a discussion of the Canadian historical context, this report describes Quebec and Amerindian education and the Cree Way Project. The project was a first attempt to help the Cree people remain a nation, introducing Cree syllabic readers for primary grade children. Since 1978, the project has been incorporated into the Cree School Board's curriculum in one community and has begun to be implemented in seven others. There are now more than 500 textbooks printed in Cree syllabics, and a Cree immersion program is in its second year. The school calendar honors Cree traditions such as hunting and ceremonial activities. The school, with its rapidly growing Native teaching staff, seeks to meet the needs and maximize the abilities of the Waskaganish community. The Cree experience supports the hypothesis that the education of indigenous peoples in their own language will further the process of second language acquisition.

Fishman, J. (1996). What do you lose when you lose your language? In G. Cantoni (Ed.) *Stabilizing indigenous languages* (pp. 80–91). Flagstaff, AZ: Northern Arizona University. (ERIC Document Reproduction Service No. ED395732)

This paper addresses the impact of language loss on culture and the need for developing effective strategies for language restoration. Culture is expressed through language; when language is lost, those things that represent a way of life, a way of valuing, and human reality are also lost. However, if you talk to members of a particular culture about language loss, they do not address the symbolism of the language but rather talk about the sacredness of language, the sense of kinship associated with language, and their moral commitment to language. Millions of people worldwide are making an effort to restore or maintain their native language. However, there are many more failures than successes in stabilizing weak languages. One reason is that whenever a weak culture is in competition with a strong culture, it is an unfair match. There is also a kind of resistance among cultural groups to the idea that something is happening to their language. Older people may be talking the language, telling stories in it, and doing all the traditional things in it, but they are not likely to be teaching children the language. By this time it is usually too late, because a new language has entered the picture and a new language–culture relationship has developed. Another reason why language restoration is difficult is because people frequently settle for acquiring the language not as a mother tongue, but during the school experience. Relying solely on the school for language transmission is not effective because it focuses on literacy as opposed to the life of the language and its relationship to the culture. Reversing language shift needs to include strategies directed toward family life, culture building, and promoting a sense of community. Schools alone cannot do this; it will take a concerted effort among all members of a cultural group to ensure that effective strategies are being implemented to foster language transmission from generation to generation.

Fore, C.L. (1998). Factors influencing academic achievement among Native American college students (Doctoral dissertation, Oklahoma State University, 1997.) *Dissertation Abstracts International, 58*(08), 4522.

The purpose of this longitudinal study was to examine class and cultural factors influencing academic achievement among college students. Participants in the study were 59 Native American and 76 Anglo American college students. Each participant completed a packet of paper-and-pencil questionnaires. Pearson's r, point bi-serial correlations, linear regressions, and logistic regressions were utilized to investigate four research questions concerning both direct and mediator relationships among the variables in relation to grade point average (GPA) and retention in college. The hypothesized mediational relationships were not found within the Native American nor the Anglo American groups. However, additional analyses demonstrated direct associations between key variables and GPA and retention in both groups. Native American students who endorsed greater perceived support from their environment achieved higher college GPAs a year later. Anglo American students who saw themselves as having more leadership experiences in the past also achieved higher GPAs. Native American students who endorsed more long-range goals were more likely to either graduate or stay in college. For Anglo American students, the extent to which they saw themselves as culturally and economically deprived was predictive of retention. Overall, Native American college students were more likely to succeed in college if they perceived their efforts to be supported and if they held more long-range career goals. For Anglo American students, leadership skills and financial assistance exert significant influences on GPA and retention.

*Fox, S.J. (1977). An evaluation of the eighth grade reading programs implemented for Indian students in North and South Dakota. (Doctoral dissertation, Pennsylvania State University, 1976). *Dissertation Abstracts International, 37*(11), 7095.

Poor reading achievement is a major problem of American Indian students. This dissertation describes eight Title I reading programs implemented during 1973–1974 in Bureau of Indian Affairs schools of North and South Dakota and evaluates them with regard to U.S. Department of Education criteria for exemplary Title I programs. The students in these programs were primarily of the Chippewa and Sioux tribes. Students in all programs improved significantly in reading ability after one year of program participation. The three schools that showed the best gains in reading ability also ranked the highest when rated against the criteria for exemplary programs. Specifically, these three schools were rated higher than other schools on having close coordination between Title I and the regular reading program and on having a structured program approach. Recommendations are offered for improving Title I programs that serve Indian children.

*Franks, M.E. (1988). _Using the gap reduction model to evaluate a successful bilingual/ESL program._ Paper presented at the annual meeting of the Mid-South Educational Research Association, Louisville, KY. (ERIC Document Reproduction Service No. ED303505)

Procedures and results of an evaluation of the Choctaw Bilingual/English as a Second Language (ESL) Program, conducted in east central Mississippi, are discussed. The program, which is in its fifth year, is implemented using Title VII funds in three of the six Bureau of Indian Affairs elementary schools on the Mississippi Choctaw Reservation. The Bilingual/ESL program focuses on increasing students' proficiency in English in a manner that does not devalue Choctaw language or culture. It involves formal classroom instruction and parent training. A major component involves the training of instructional personnel in ESL instructional methods. The means used to evaluate the project was the gap-reduction design advocated by G.K. Tallmadge et al. During the evaluation, the program served 139 students enrolled in kindergarten through grade three. All students were dominant Choctaw speakers with limited English proficiency. A comparison group of 194 non-ESL students in kindergarten through grade four was used. Students in both groups were administered the California Achievement Test (CAT) in April of 1987 and 1988. The unit of analysis was the standard score for the reading, language, and total battery. Results indicate that the students in the program made greater gains in all three batteries of the CAT than did non-ESL students. It is concluded that the program has been sufficiently effective to recommend its adoption by the entire school system. In addition, the gap-reduction method of program evaluation has proven to be an efficient and effective method of evaluating supplemental educational programs. Nine data tables and five graphs are presented.

*Gage, J., & Robson, D. (1984, October). _Patterns of achievement and self-concept among students in a tri-ethnic community._ Paper presented at the annual meeting of the Northern Rocky Mountain Educational Research Association, Jackson Hole, WY. (ERIC Document Reproduction Service No. ED252343)

Commissioned by the Southern Ute Tribal Council and coordinated by the Education Division of the tribe, this study was undertaken to collect and analyze data relating to achievement patterns of Native American, Hispanic, and Anglo children in the public school system in Ignacio, Colorado. The major objective of the study was to determine if differences existed in achievement levels of the three ethnic groups in elementary, junior high, and senior high schools and if differences were found, which demographic, attitudinal, and cultural variables were associated with the differences. A self-inventory was completed by 364 students (primary, 109; intermediate, 66; secondary, 189). A random sample of 10 Ute, 10 Hispanic, and 10 Anglo parents of high school students were interviewed. The basic findings of the study revealed that achievement differences did exist between the three ethnic groups. These differences were associated with three factors--school attendance, self-concept, and parent attitudes toward the school. Eight recommendations were presented to the Ute Tribal Council for consideration in reference to this study.

Giles, K.N. (1985). *Indian high school dropout: A perspective.* Milwaukee, WI: University of Wisconsin, Midwest National Origin Desegregation Assistance Center. (ERIC Document Reproduction Service No. ED270282)

The purpose of the study was to discuss what happens to Native Americans in public schools and try to discern cultural factors, which directly affect Indian students' decision to remain in or drop out of high school. The author reports the findings of a research study she conducted with Native American students in the Milwaukee Public Schools. The study involved eight case studies of high school Indian students, including both high academic achievers and dropouts. The age ranged from 17 to 18 years old for the enrolled students and up to 20 years old for the dropout students. The participants volunteered and were divided equally between male and female. The hypothesis of the author was that if a student was shown to embody the Native American value orientation, they would have a high probability of dropping out of high school. The results of the case studies showed evidence that the more assimilated an Indian student is into the American middle-class value orientation, the more likely that the student will be successful in school. Likewise, the closer the student was to the Native American value orientation on the continuum scale, the more likely he or she was to drop out of high school.

Goulet, L. (2001). Two teachers of aboriginal students: Effective practice in sociohistorical realities. *Canadian Journal of Native Education, 25*(1), 68–82.

Based on interviews, the stories of two effective teachers of Aboriginal students illustrate how the teachers (one Native and one non-Native) attend to both culture and colonization. In different ways, each teacher integrates language, cultural knowledge, and cultural values into the classroom, thereby equalizing power relationships and dealing with the impact of colonialism.

Grant, A., & Gillespie, L. (1992). *Using literature by American Indians and Alaska Natives in secondary schools.* [ERIC digest.] Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools. (ERIC Document Reproduction Service No. ED348201)

Literature is a powerful vehicle for the transmission and interpretation of culture. Reading a variety of literature helps students to understand the principles underpinning values and traditions of their own culture and the cultures of others. Studying the myths, legends, and songs of traditional Native literature helps readers understand contemporary Native literature and appreciate its differences from the mainstream. However, the accepted canons of literature exclude works by American Indians and Alaska Natives. Furthermore, the few literary works about Native Americans that have secured a place in the secondary school curriculum were written by non-Natives, are unauthentic, portray cultural information inaccurately, and perpetuate negative stereotypes. Over the centuries, the stereotypical Native American in literature has shifted from simple, superstitious child of God to bloodthirsty savage to noble savage to victimized dispossessed nomad. Non-Native writers today continue to portray Native people as the "other" when they acknowledge their existence at all. It is only by creating and widely circulating their own literature that Native peoples can become a part of the American "us" and take their rightful place in the American literary canon. It is time for secondary schools to introduce their students to the growing body of Native literature. This digest contains 17 references and suggested readings for secondary students.

Grantham-Campbell, M. (1998). It's okay to be native: Alaska Native cultural strategies in urban and school settings. *American Indian Culture and Research Journal, 22*(4), 385–405.

The urban Alaska Native community in and around Fairbanks is drawing on its rural roots to reshape schooling experiences. Alaska Natives are resisting the pattern of dropping out and are claiming a place in school, asserting that it's OK to be Native; Native teachers are committed to developing Native curricular materials; and tribal colleges and "culture camps" have emerged.

*Greene, R.H., & Kersey, H.A. (1975). Upgrading Indian education: A case study of the Seminoles. *School Review, 83*(2), 345–361.

Authors' research indicated that the "equal and alike" approach to education doesn't work for the American Indian, either.

Greig, L.M. (1987). Native American cultural attachment: The relationship to student cognitive style and academic achievement (Doctoral dissertation, University of Washington, 1987.) *Dissertation Abstracts International, 47*(12), 4327.

This cross-sectional study investigated the relationships among cultural attachment, cognitive style, and academic achievement for Native American and majority students in the fourth, eighth, and 10th grades. Sixty-six American Indian and 73 majority students from the same school district provided data for this study. Subjects were distributed across grade levels as follows. Fourth grade: 19 Native American, 21 majority; eighth grade: 30 Native American, 30 majority; 10th grade: 17 Native American, 22 majority. Two measures were developed to assess cultural attachment.

The first, the Cultural Attachment Measure I (CAMI), was designed for use with American Indian subjects; and the second, the Cultural Attachment Measure II (CAMII), was designed essentially as a placebo for subjects of ethnic backgrounds other than Native American. In order to assess field dependence/independence, the Group Embedded Figures Test (GEFT) was administered. Test scores from the Metropolitan Achievement Test (MAT) were used as measures of academic achievement. Factor analysis of 15 items on the CAMI revealed five separate factors of cultural attachment for the Native American subjects across grade levels. Correlational analyses were based on these factors. Four of the five cultural attachment factors were significantly and negatively related to academic achievement scores for the eighth-grade Native Americans. There were few significant relationships between the cultural attachment factors and academic achievement scores for the fourth- or 10th-grade Native Americans. No cultural attachment factors were significantly related to cognitive style at any grade level. Significant differences were revealed with *t*-tests between academic achievement scores of American Indian and majority subjects at all grade levels. No significant differences in GEFT scores were found between Native American and majority scores at the fourth- or eighth-grade levels. Tenth-grade majority subjects were significantly more field independent when compared to Native American subjects at the same grade level. Within both the fourth- and eighth-grade samples, field independence was significantly related to academic achievement for majority students only. The conclusions of this study have a number of educational values. These include the identification of cultural variables affecting Native American achievement and the development of the CAMI as a research instrument.

*Greymorning, S. (1997). Going beyond words: The Arapaho immersion program. In J. Reyhner (Ed.), *Teaching indigenous languages* (pp. 22–30). Flagstaff, AZ: Northern Arizona University. (ERIC Document Reproduction Service No. ED415061)

This paper examines the growth and development of the Arapaho immersion program and discusses language revitalization strategies and methods used on the Wind River Reservation (Wyoming). Following a community request for an Arapaho language and culture program in reservation public schools, a test class of kindergarten students received an hour of Arapaho instruction daily for 18 weeks. After 12 weeks, 80 percent of students had mastered 162 words and phrases. These favorable results plus information from Hawaiian immersion programs led to implementation of a half-day immersion kindergarten class in September 1993. A belief in the need to increase students' language contact hours led to a preschool immersion class; a summer program; and finally, a six-hour-a-day school immersion program. Although children in the expanded school program greatly increased their mastery of Arapaho, they did not come close to fluency because they lacked the ability to independently use and manipulate new speech forms. In 1996, a trainer from the Hawaiian language immersion system was hired to guide and train staff in proven immersion techniques, and a second immersion class was begun on another part of the reservation. Both classes made astonishing progress, but fluency was again elusive. To achieve fluency, children must be systematically exposed to a full array of speech forms by a well-trained teacher with a clear understanding of language acquisition. Thus, effective teacher training remains a critical issue for language immersion programs. Implications of the enormous success of Maori immersion efforts are discussed.

Harrison, B. (1986). Manokotak: A study of school adaptation. *Anthropology and Education Quarterly, 17*(2), 100–111.

Presents results of a case study of a school in Manokotak, AK, a Yup'ik Eskimo community, and describes the cultural gap between the school and the minority community. Adaptations in the school evolved over time, and the direction of change was toward integration of the process of schooling into the culture of the local community.

*Harrison, B. (1998). Te Wharekura o Rakaumangamanga: The development of an indigenous language immersion school. *Bilingual Research Journal, 22*(2–4), 297–316.

Describes development since 1985 of a Maori immersion school for children aged five to 17. Provides background on Maori and New Zealand history, the Waikato tribe and the community, indigenous language revitalization efforts, and national school restructuring that facilitated Maori immersion programs. Discusses the school's educational practices, school-community relations, student performance and academic persistence, and teacher training. (Contains 30 references.)

*Hartley, E.A., & Johnson, P. (1995). Toward a community-based transition to a Yup'ik first language (immersion) program with ESL component. *Bilingual Research Journal, 19*(3–4), 571–585.

In the small Alaskan village of Manokotak, the community participated in the school's shift from an "English submersion" program to Yup'ik immersion plus ESL. Discusses community involvement and participative planning, first-year goals, scheduling of instructional time in each language, staff development, materials development, cultural relevance versus competency-based education, student evaluation, and problems during the change process.

^Haukoos, G.D., Bordeaus, L., & LeBeau, D. (1995). Importance of American Indian culture in teaching school science: A follow-up study. *Journal of American Indian Education, 34*(2), 18–26.

The purpose of this study was to examine teachers' retention of science content and pedagogy one year after an inservice education program. In the initial study of outcomes from the inservice training activities, participants demonstrated their need to increase integration of science and native culture, decrease their use of content/teacher-centered teaching strategies, and increase their use of hands-on/student-centered teaching strategies (Haukoos & LeBeau, 1992). In this follow-up study, however, years of education in Eurocentric and didactically taught science classrooms took their toll on participants once they returned to their own students. Study results showed participants retained a degree of understanding that science was to be taught using hands-on/student-centered strategies, but initial gains in integrating science and native culture and moving away from content/teacher-centered teaching strategies lost much of their earlier momentum. The dilemma of educational reform in school science, and teachers returning to educational settings that lack support systems and history of incorporating American Indian culture are discussed.

Heimbecker, C., Bradley-Wilkinson, E., Nelson, B., Smith, J., Whitechair, M., Begay, M.H., et al. (2001). Rural Navajo students in Kayenta Unified School District's special education programs: The effects of home location and language. In *Growing partnerships for rural special education: Conference proceedings* (pp. 134–140). Manhattan, KS: American Council on Rural Special Education. (ERIC Document Reproduction Service No. ED453027).

In Kayenta Unified School District (KUSD) on the Navajo Reservation, 92 percent of students come from homes where Navajo is the primary language, but many students entering school are not fluent in either English or Navajo. A survey of 23 educators examined the effects of language and culture on the likelihood that a student would be placed in special education classes. Although many respondents expressed concern about the potential mislabeling of Navajo students in off-reservation schools, KUSD was seen as a model provider of special education services for Native American students. KUSD school psychologists (who are Navajo) and other KUSD special education staff help to ensure that special education assessments are contextualized and culturally sensitive, use both the Navajo and English languages, occur over an extended period of time, and are conducted by a multidisciplinary team of educators and parents. Respondents also discussed the influence of the teacher's predominant culture and proficiency in English and Navajo on Navajo students' placement in special education, the need for teachers to be aware of the child's predominant culture and living conditions, the importance of family-school partnerships and difficulties in creating them, opinions about full inclusion, and particular disadvantages faced by very rural students.

Hollins, E.R., King, J.E., & Hayman, W.C. (Eds). (1994). *Teaching diverse populations: Formulating a knowledge base.* Albany, NY: State University of New York Press.

This book presents a collection of articles on current knowledge about teaching culturally diverse populations that are traditionally underserved in US schools. Includes articles on Alaska Natives, American Indians, Educational Change, Educational Practices, Native Americans, etc. Literature review, including a piece entitled, "Culturally responsive pedagogy in action: An American Indian magnet school" by Cornel D. Pewewardy.

*Holm, A., & Holm, W. (1995). Navajo language education: Retrospect and prospects. *Bilingual Research Journal, 19*(1), 141–167.

The paper describes the growth and development of bilingual education on the Navajo Reservation and resultant outcomes for Navajo students, educators, and communities, and demonstrates how learning is mediated by language and culture in the Navajo context, as well as the critical conditions needed to sustain genuine two-language education. (16 references)

*Hopkins, G., & Bean, T.W. (1999). Vocabulary learning in the verbal-visual word association strategy in a Native American community. *Journal of Adolescent & Adult Literacy, 42*(4), 274–281.

The paper describes classroom action research with the verbal-visual word association strategy. Explores the strategy with a group of junior high and high school students on the Northern Cheyenne Reservation in southeastern Montana. Shares interpretive impressions and results of a vocabulary quiz given to the high school group.

*Huffman, T., Sill, M.L., & Brokenleg, M. (1986). College achievement among Sioux and white South Dakota students. *Journal of American Indian Education, 25*(2), 32–38. (EJ336454)

This study relates several social, cultural, and aspirational factors to achievement measured by grade point average among 38 Sioux and 48 white college students. Finds high school GPA and parental encouragement most important for white students, cultural identity and retention of Native cultural traditions most important for Sioux students.

*Jacob, J. (1977). The effects of individualizing instruction by the use of multi-sensory multi-media learning centers in reading and arithmetic achievement of inner-city children (Doctoral dissertation, Michigan State University, 1976). *Dissertation Abstracts International, 37*(09), 5586.

The study examined the effects of an individualized, diagnostic, prescriptive instructional approach on the reading and mathematics achievement of inner-city children. Subjects were 211 fifth- and sixth-graders in Benton Harbor, Michigan. Experimental groups of students received individualized instruction through multisensory, multimedia learning centers and were allowed to progress at their own pace. Control groups received conventional instruction. After six months, students in experimental groups had significantly higher reading scores on the California Achievement Test, compared to controls. In addition, individualized instruction increased the self-direction and independence of students in the experimental group. There were no significant differences in mathematics achievement. Teacher training in the individualized instructional approach is described. (Contains 34 references.)

*James, K., Chavez, E., Beauvais, F., Edwards, R., & Oetting, G. (1995). School achievement and dropout among Anglo and Indian females and males: A comparative examination. *American Indian Culture and Research Journal, 19*(3), 181–206.

Among 1,607 American Indian and Anglo dropouts and currently enrolled middle and high school students, language difficulties and problems with teachers were predictive of academic troubles and dropping out. Success of Indian students was related to stronger Anglo cultural identity and better English proficiency (in mainstream schools) but was not related to Indian cultural identity.

Johnson, R. J. (2000). Case studies of expectation climate at two bilingual education schools. *Bilingual Research Journal, 24*(3), 261–276.

In two Texas elementary schools with similar student demographics but different school and district environments, teacher expectations about bilingual education students were influenced by differing bilingual education goals, beliefs about the value of student native language, teacher beliefs and district expectations about curriculum, and the use of the accelerated school model (in one school).

*Kamehameha Early Education Program. (1974). *Major KEEP findings, 1971–1975.* Honolulu, HI: Kamehameha Schools. (ERIC Document Reproduction Service No. ED158869)

This report lists the 34 major research findings from the Kamehameha Early Education Program (KEEP) for the years 1971–1975. Each finding is accompanied by a listing of KEEP technical reports and working papers, which contain information relevant to that finding. Included among areas covered in the findings are 1) student motivation, 2) teacher training, 3) student achievement, 4) curriculum, 5) teaching methods, 6) ethnic dialects, 7) family background, and 8) information dissemination.

Kawagley, A.O., & Barnhardt, R. (1999). *A long journey: Alaska Onward to Excellence in Yupiit/Tuluksak schools.* [Case study] Portland, OR: Northwest Regional Educational Lab; Fairbanks, AK: University of Alaska. (ERIC Document Reproduction Service No. ED437254)

As part of a larger study of systemic education reform in rural Alaska, this case study examines the school improvement process undertaken in Yupiit School District (YSD). YSD consists of three Yupiaq villages in southwest Alaska that joined together in 1984 to form the Yupiit Nation and to run their own schools. In 1992 a district-level leadership team, trained in the Alaska Onward to Excellence school improvement process, called the first communitywide meetings to discuss the values and beliefs that should be passed on to the next generation. The district team then compiled community values and beliefs, drew up a draft mission statement, and listed tentative student goals. After extensive community feedback, the YSD school board adopted the following student goals: knowledge of Yup'ik values, culture, and subsistence skills; preparation for work and further education; respect and positive attitudes toward life, learning, and community; development as law-abiding citizens; and ability to communicate in Yup'ik and English. Local leadership teams then identified the goal of greatest concern in each community and developed specific

actions to advance that goal. By the third year of the process, results included improved student attendance, increased parent and elder participation, provision of curricular training, and closer school-community cooperation. This cooperation was particularly noteworthy in the development of a seasonally organized cultural curriculum. Through this curriculum, everyone in the community becomes a teacher, every place is a potential classroom, and every community activity constitutes a learning opportunity.

Kawakami, A.J. (1999). Sense of place, community, and identity: Bridging the gap between home and school for Hawaiian students. *Education and Urban Society, 32*(1), 18–40.

This study examined issues inherent to the gap between the home and school cultures of Native Hawaiian students, focusing on developing an understanding of present dilemmas in Hawaiian education; reviewing related research; describing initiatives in K–12 curriculum development and teacher training; and identifying implications for policy and reform issues in the future.

*Kerbo, H.R. (1981). College achievement among Native Americans: A research note. *Social Forces, 59*(4), 1275–1280.

Data on cultural factors and academic success of Native American college students suggest that the predictors of grade point average among these students are different from predictors for whites. The best independent predictors for Native Americans are degree of identification and social integration with whites.

*Kimble, R.L., & Davison, R.G. (1972). Reading improvement for disadvantaged American Indian youth. *Journal of Reading, 15*(5), 342–346.

A corrective reading program that was focused on improving students' reading level and skills was conducted on the American Indian youth at the Chilocco Indian School in Oklahoma during the 1970–1971 school year. The program used a full-time teacher and teacher aide who offered students a variety of reading activities and incentives toward raising reading skills, study skills, comprehension, vocabulary, and language development. In order to measure the effectiveness of the reading program a standardized pretest was administered and a posttest was given at the end of the school year. The results of the posttest revealed that at the end of the year, students' vocabulary and comprehension score went up and were significant at the .01 and .001 levels respectively. The authors cited several generalizations that could be made from their study and the effectiveness of the reading program: 1) the corrective reading program was effective in improving reading achievement in an accelerated manner; 2) the availability of staff appeared to have a positive effect on performance and encouraged student commitment; 3) a diversified reading program was effective in increasing students' reading achievement; and 4) reinforcements of affective behavior through individual contacts and the use of a reward system appeared to increase the motivational levels of students.

*Kleinfeld, J. (1975). Effective teachers of Eskimo and Indian students. *School Review, 83*(2), 301–344.

The author described the problems of Alaska Natives who confront the "equal and alike" classroom teacher and fail to learn. As well, she considered four different types of teachers in the classrooms of Alaska and how only one successfully taught her Native students.

*Kleinfeld, J.S. (1979). *Eskimo school on the Andreafsky: A study of effective bicultural education.* New York, NY: Praeger.

This book is a case study of a Catholic boarding high school for Alaska Eskimos from remote villages undergoing rapid change. Six chapters appraise the bicultural educational principles employed at St. Mary's: a profile of the students as effective bicultural people; the relationship between students and staff; educational aims and methods used at St. Mary's; values and ideals of the students; student selection policies; and the model used at the school for bilingual and bicultural education. The study concludes that St. Mary's is highly effective in cross-cultural education and produces graduates with skills and communication style needed for access to the opportunities of the majority culture; its graduates succeed in college much more frequently than comparable Eskimo students, but learning skills that enable them to function well in the majority culture do not cut them off from the culture of their home villages, where they are noteworthy for quiet village leadership. An epilogue discusses problems encountered by the school and possible alternatives for its continued existence. Four appendices present statistics on characteristics of students, staff, and graduates, and the research methods used.

*Kleinfeld, J.S., McDiarmid, G.W., & Hagstrom, D. (1985). *Alaska's small rural high schools: Are they working?* (Abridged ed.) Fairbanks, AK: University of Alaska, Center for Cross-Cultural Studies.

The report describes the educational programs that Alaska's 162 small rural high schools offer, identifies educational problems, and examines strategies that districts and schools have devised to strengthen these schools. The schools mostly serve Eskimos and American Indians, have fewer than 100 students, and are located in communities of fewer than 1,000 residents. Information was obtained through telephone interviews, mailed surveys, site surveys of 32 randomly selected schools, achievement test scores, and in-depth studies by educators. Findings indicate that most communities want village high schools as well as boarding school options; replacement of boarding schools with village high schools has resulted in dramatically increased graduation rates; high school size does not determine the quality of students' educational experiences or achievement on standardized tests; and schools that are working well exhibit a strong teacher/community partnership, teacher/community agreement on a theme for the educational program, an enterprising teaching staff, and a central office that encourages adapting schooling to local needs. Successful strategies are described for problems in the areas of increasing course and teacher variety, providing vocational education, preparing students for college, raising achievement test scores, teaching students about the outside world, and helping rural students through the transition to adulthood.

Krauss, M. (1998). The condition of Native North American languages: The need for realistic assessment and action. *International Journal of the Sociology of Langucge, 132,* 9–21.

Of about 210 indigenous languages still extant in the United States and Canada, 34 are spoken by speakers of all generations, 35 are spoken by the parental generation and up, 84 are spoken by the grandparental generation and up, and 57 are spoken by only a few aged speakers. This general profile is compared with a survey of the languages of the circumpolar North and indigenous languages in New Mexico and Arizona. The latter exhibit the greatest retention, but even these languages face the threat of extinction. The major issue of denial is addressed, along with the effects of bilingual education programs, which, it is argued, may tend to remove responsibility for language transmission from the home to the school. There is an urgent need for facing the facts and psychology of denial, and for realistic programs that include a commitment to intensive oral immersion. The role of linguists in working in the interest of Native American languages and communities is considered.

Kushman, J., & Barnhardt, R. (1999). *Study of Alaska rural systematic reform: Final report.* Portland, OR: Northwest Regional Educational Laboratory. (ERIC Document Reproduction Service No. ED437251)

The three-year study of educational reform in rural Alaska centered around case studies in seven rural communities and school districts serving primarily Eskimo and American Indian students. Each community had embarked on a reform process called Alaska Onward to Excellence (AOTE) that strove to create educational partnerships between schools and their communities. The study examined how educational partnerships were formed and sustained and how they ultimately benefited Alaska Native students. A focal point was the nature of systemic change, which in rural Alaska means to fully integrate the indigenous knowledge system and the formal education system. Major findings that emerged from a cross-case analysis of the case studies were categorized into six themes: sustained long-term reform, strong and consistent leadership, personal relationships between school personnel and community, educational partnerships, rural schools and communities, and educational goals. The report includes executive summaries of the seven case studies and reform-related recommendations for rural schools.

Kushman, J.W., & Barnhardt, R. (2001). Reforming education from the inside-out: A study of community engagement and educational reform in rural Alaska. *Journal of Research in Rural Education, 17*(1), 12–26.

The study examined seven rural Alaska communities engaged in educational reform. Findings indicate that educators must work with small communities to design reforms around local culture; parents must participate actively in school life and decisions; district leaders must share leadership to increase local ownership of reforms; and education in rural Alaska involves more than academic skills.

*Larimore, C.K. (2001). When worlds collide: Native American students navigating dominant culture classrooms (Doctoral dissertation, University of California, Berkeley, 2000). *Dissertation Abstracts International, 61*(07), 2932A.

A group of Native American children in an urban public elementary school were followed across different types of classroom environments, from third to fifth grade. Similar to Native students in reservation schools, these children disengaged when teachers emphasized verbal versus visual instruction; avoided competition and public performance; and were uneasy about demonstrating new skills without adequate practice. However, these children tended to adapt more readily, take more risks, and perform new skills more willingly in classrooms where teachers used cooperative learning practices. Surprisingly, the influence of a competitive or cooperative classroom could be mitigated by student actions. Native students with willing collaborators could find ways to learn cooperatively even in competitive classrooms. On the other hand, a preponderance of highly competitive non-Native students could interfere with practices in a cooperative classroom and thus impede Native students' progress. Native parents influenced their children's adaptation to school through the relative value they placed on education versus becoming a good person.

*Leap, W.L. (1991). Pathways and barriers to Indian language literacy-building on the Northern Ute reservation. *Anthropology and Education Quarterly, 22*(1), 21–41.

The paper describes recent efforts by members of the Ute tribe (northeastern Utah) to introduce a written form of the Ute language. Discusses several reasons for the resistance to Ute literacy among many members of the tribe and the steps that have been taken in response to these concerns.

Leavitt, R. (1991). Language and cultural content in Native education. *Canadian Modern Language Review, 47*(2), 266–279.

It is possible to provide culturally appropriate education for native Canadian Indian and Inuit children within the framework of the European schooling model by finding a balance between building on the children's native experiences and taking from English language and pedagogy what they can use appropriately in their own culture.

Ledlow, S. (1992). Is cultural discontinuity an adequate explanation for dropping out? *Journal of American Indian Education, 31*(2), 21–36.

This paper focused on the high dropout rate for American Indian high school students. The article hypothesizes that there is little to no explicit research available to support the common theory that cultural discontinuity between home and school is the major reason for the high dropout rate. The cultural discontinuity hypothesis assumes that culturally based differences in the communication styles of the minority students' homes and the Anglo culture of the school lead to conflicts and ultimately failure for those students. The majority of the article is a review of literature and the conclusion drawn by the author is that, while there is not enough evidence to conclude that cultural discontinuity plays a significant role, there is evidence that economic and social issues not culturally specific to being Indian are very significant in causing students to drop out of school. No specific dropout rates are cited and the focus is not on factors that lead to dropping out.

Leveque, D.M. (1994). Cultural and parental influences on achievement among Native American students in Barstow Unified School District (Doctoral dissertation, University of Southern California, 1993). *Dissertation Abstracts International, 54*(11), 4014.

The academic achievement of Native American kindergarten through grade 12 students in the United States has consistently been the lowest in the nation. In light of this statistic, this case study examined the academic achievement of a group of Native American students in a specific setting: Barstow (California) Unified School District. The purpose of the study was to determine the academic achievement patterns for this specific group of Native students and to explore the relationships between school programs, parental involvement, acculturation and assimilation patterns, and the academic achievement of these students. The study employed participant observation, ethnographic interview, and documentary analysis in school/classroom settings, in the homes of Native families, in parent meetings, and at special activities. Through intergenerational interviews, the history of the group across four generations was described. Contrary to the achievement patterns of Native American students nationally, Native American students in Barstow were found to be achieving as well as or better than their non-Native peers, generally, than the Caucasian majority, and than Hispanic and Black subgroups. The strongest relationships between educational opportunities and Native student achievement were found to be, not in the school opportunities themselves, but in the patterns evidenced in parental involvement in the schools and acculturation and assimilation of the families across four generations. Three variables in the Barstow setting contributed to the academic success of these Native American students: the Native families had become immigrant minorities and were no longer 'castelike minorities' (Ogbu, 1978), since they had chosen to establish permanent residence in Barstow; the group was experiencing equality of post-school opportunity; and school involvement by Native parents resulted in ownership of and commitment to the goals and purposes of the school by these parents. Six elements were present in the setting, which enabled acculturation and assimilation to occur over three generations for this group: immigration to Barstow by choice; aspects of their settlement history served to minimize culture shock and intercultural conflict; economic security; size of the group; marital assimilation; and parental involvement in the schools. (Copies available exclusively from Micrographics Department, Doheny Library, USC, Los Angeles, CA 90089-0182.)

*Leveque, D.M. (1994, March). *Cultural and parental influences on achievement among Native American students in Barstow Unified School District.* Paper presented at the national meeting of the Comparative and International Educational Society, San Diego, CA. (ERIC Document Reproduction Service No. ED382416)

The academic achievement of Native American students in the United States has consistently been the lowest in the nation. This study examined the school performance, involvement of Native parents in the school life of their children, and assimilation patterns of a specific group of Native Americans who have lived in Barstow, California, for at least three generations. The case study approach used participant observation, ethnographic interviews, and documentary analysis. Analysis of norm-referenced test data indicated that Native American students (K–12) in Barstow Unified School District (BUSD) scored as well as, or better than, the BUSD mean percentile scores for the total student population and the Caucasian subpopulation in all areas except second-grade reading in 1992 and third-grade reading in 1993. Between 1991 and 1993, the dropout rate for Native American students was only 10 percent, and the honor roll rate was 30 percent. At least 36 percent of Native students who attended BUSD between 1988 and 1993 continued their education past high school. The strongest link between educational opportunities and Native student achievement was found in the involvement of parents in the design and implementation of programs. The Native American families in Barstow are the descendants of Navajo and Pueblo railroad workers who chose to come to Barstow (thus assuming "immigrant" characteristics). Full assimilation into the majority culture occurred over three generations. Thus, the strongest elements contributing to Native student achievement were parental involvement and family acculturation patterns. The findings suggest that Ogbu's categories of immigrant and nonimmigrant minorities are not static, and that nonimmigrant minorities may not be bound to their caste-like status.

*Levin, M., Moss, M., Swartz, J., Khan, S., & Tarr, H. (1997). *National evaluation of the Even Start Family Literacy Program. Report on Even Start projects for Indian tribes and tribal organizations.* Bethesda, MD: Abt Associates, & Arlington, VA: Fu Associates. (ERIC Document Reproduction Service No. ED415084)

The tribal Even Start program is one of the set-aside components of the U.S. Department of Education's Even Start Family Literacy Program. Even Start combines adult literacy, early childhood education, and parenting education services for parents eligible for adult education and their children from birth to age seven. In 1994–1995, nine Indian tribes and tribal organizations received direct federal grants to administer Even Start projects. This report examines three of the projects: those administered by the Makah Tribe (Washington), the Cherokee Nation (Oklahoma), and the Pascua Yaqui Tribe (Arizona). The following is covered for each project: community characteristics, recruitment of families, program staff, content and delivery of Even Start services, coordination of service components, and evaluation and the Even Start Information System (ESIS). The three projects each serve 20–27 families in primarily rural areas. Many core services are delivered during home visits. This may be the preferred mode of delivery for tribal projects, due to expansive catchment areas and lack of public transportation, and because participants and staff are often previously acquainted. Major issues and challenges confronting tribal projects are related to preserving tribal culture, encouraging parent involvement, poverty, unemployment, lack of facilities, and lack of culturally relevant materials. The Appendix includes topic and observation guides for site visits.

*Lin, R.L. (1990). Perception of family background and personal characteristics among Indian college students. *Journal of American Indian Education, 29*(3), 19–28.

Among 87 American Indian students at a Montana college, those from traditional families were more task- and achievement-oriented, had higher grade point averages, and spent more time doing homework. Those from modern families cared more about professors' opinions and skipped more classes. Contains the survey questionnaire.

Lipka, J. (2002). *Schooling for self-determination: Research on the effects of including Native language and culture in the schools* [ERIC digest]. Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools. (ERIC Document Reproduction Service No. ED459989)

This digest briefly reviews the impacts of assimilationist education for American Indians and Alaska Natives (AI/AN) and describes recent examples of successful AI/AN schools that incorporate students' native language and traditional culture into the curriculum. Beginning in the 1870s, federal policy emphasized assimilation as the goal of AI/AN education. Assimilationist policies had the effects of separating AI/AN students from their communities, weakening Native languages and cultures, driving students toward a marginalized identity, alienating students from schooling, and producing subtractive bilingualism. The past three decades have seen many efforts to restore and revitalize Native languages and culture through the schools and to use indigenous knowledge and language to meet both local and Western educational goals. Concurrently, the notion of appropriate academic knowledge has been reevaluated, and some teachers and elders have found ways to connect local practical and cultural knowledge to the school curriculum. Four exemplary AI/AN programs are described that involve community or tribally controlled schools, use indigenous culture and language, and have resulted in a significant gain in academic achievement. These include Navajo programs in Arizona, a Native Hawaiian program in Honolulu, and an Inuit-controlled school using Inuktitut in Nunavik (northern Quebec).

Lipka, J. (1994). Culturally negotiated schooling: Toward a Yup'ik mathematics. *Journal of American Indian Education, 33*(3), 14–30.

The Ciulistet, an Alaska Native teachers' research group, focused on the development of Yup'ik culturally based mathematics. The article examines difficulties in interpreting Yup'ik knowledge to school-based mathematics, theoretical implications for indigenous education, and the process of culturally negotiating context and content of schooling. It describes the Yup'ik number system and the use of polar coordinate geometry in traditional basket weaving. The article also focuses on the processes and development of Yup'ik culturally based math. The premise behind this work is that the Yup'ik language, culture, world view, particularly subsistence activities, contain mathematical concepts. Participants are increasingly realizing the potential of using their culture and language as a means to change the culture of schooling.

*Lipka, J., & McCarty, T.L. (1994). Changing the culture of schooling: Navajo and Yup'ik cases. *Anthropology & Education Quarterly, 25*(3), 266–284.

This article presents two cases in which indigenous teacher groups are transforming the culture of schooling. Data are drawn from more than a decade of ethnographic and action-oriented research at Rough Rock Demonstration School, on the Navajo Nation in northeastern Arizona, and in 10 Yup'ik community schools in southwestern Alaska. By coming together in indigenous teacher study groups, Navajo and Yup'ik teachers and elders are finding creative ways to use their culture, knowledge, and language in the construction of curriculum and pedagogy. These teacher groups have created zones of safety in which resistance to conventional practices can be expressed and innovative approaches to schooling investigated and practiced. The work of these teacher groups has theoretical implications for community-based teacher preparation. Factors influencing development of these groups and their ability to effect change are discussed, along with the challenges of transferring their cultural creations to the wider institutions of schooling. (Contains 32 references.)

*Little Soldier, L. (1988). *Sociocultural context and language learning of Native American pupils.* Paper presented at the annual meeting of the National Association for Bilingual Education, Houston, TX. (ERIC Document Reproduction Service No. ED295503)

The study examined the quantity and quality of language produced by kindergarten and early primary Native American pupils in relation to selected factors in the classroom context in which the language was produced. Observations of about 50 classrooms were conducted in schools serving predominantly Native American pupils on and off reservations in New Mexico. A rating sheet was used to evaluate the sociocultural environment of the classrooms. Results showed that informal classroom organization with flexible arrangement of furniture and emphasis on group work enhanced language learning. Other factors relating positively to language learning were situations in which the locus of control was shared by teachers and pupils, where there was an emphasis on cooperative learning and dialogue patterns involving pupils to a great degree, and in which culturally relevant materials or activities were used.

Lockee, B.B. (1997). Development of a hypermedia template using whole language instructional methods for the preservation of Native American languages (Doctoral dissertation, Virginia Polytechnic Institute and State University, Blacksburg, 1996). *Dissertation Abstracts International, 57*(07), 2981.

This developmental study addresses the problem of Native American language loss through the development of a new instructional model to teach indigenous languages to Native American learners. Whole language methods advocated in second language instruction incorporate observational learning strategies--strategies that are inherent in the Native American home, but often ignored in school. Instructional technology provides a mechanism for the development of curriculum materials that reflect appropriate instructional techniques. A template with embedded whole language methods to address culturally specific learning strategies was created through the use of hypermedia. The design, development, and implementation of the project template are detailed. The thematic content framework of the template is local legends about the origins of celestial elements. A sample product using the Cherokee language was created from the template and pilot tested on a reservation in North Carolina. Pilot test data are discussed, as well as recommendations for future research in the use of technology for Native American language preservation. A Developer's Guide to Template Modification is appended to support the adaptation of the template for use with other Native American languages.

Louis, W., & Taylor, D. (2001). When the survival of language is at stake: The future of Inuttitut in Arctic Quebec. *Journal of Language and Social Psychology, 20*(1–2), 111–143.

The paper compares the functional rules of English, French, and Inuttitut in Arctic Quebec. In their concern with disadvantaged members of society and their focus on functional differences in language use, the authors draw on early research by W. P. Robinson concerning language and social behavior for working- and middle-class speakers. First, they present evidence concerning the importance of sustained heritage language development in second-language acquisition and address the implications of this finding in terms of additive versus subtractive bilingualism in the North. Second, they contrast the language proficiencies of children in the two dominant languages, English and French, exploring variations in status and their concomitant effects on language acquisition. The authors used a longitudinal design including three test occasions: at the end of grade three, and the ends of grades four and five. The final sample included 35 Inuit children in English or French language programs. Finally, they compare the conversational versus academic language proficiencies of Inuit children in the context of minority vs. dominant language education and discuss implications for the debate on language deficits versus differences for disadvantaged children.

*Macias, J. (1987). The hidden curriculum of Papago teachers: American Indian strategies for mitigating cultural discontinuity in early schooling. In G. Spindler & L. Spindler (Eds.), *An interpretive ethnography of education: At home and abroad* (pp. 363–380). Hillsdale, NJ: Lawrence Erlbaum.

This chapter summarizes the major findings of an ethnographic case study of Papago children in a tribal Head Start program on the Papago Reservation (Arizona). For many children of ethnic minority origin, the transition from home to school is a critical period of cultural discontinuity. The two-year study, which included nine months of intensive field work at the Papago Early Childhood Head Start Program (PECHS), examined some cultural discontinuities experienced by Papago preschool children and the responses of their Papago teachers in helping them cope with the contradictions of their first schooling experience. PECHS was intentionally preparing preschool children to enter a mainstream school system. Three main areas of cultural discontinuity were identified: the school's encouragement of children's verbal behaviors; increased interference with children's autonomy through imposition of new behavioral rules and norms; and introduction to mainstream ways of life through various new experiences. At PECHS, Papago teachers developed their own Papago "hidden curriculum" geared to reduce the negative impact of discontinuity. These teachers incorporated Papago experiences, values, and ways of relating into discontinuous activities and experiences and thereby increased student engagement, compliance, and later success in school.

*Malmberg, S.R. (1983). *A new beginning: A case study of the establishment of a rural community-based alternative high school, emphasizing basic academic skills, with a high Native American minority student population, Vol. I.* Sault Sainte Marie, MI: Sault Sainte Marie Public Schools. (ERIC Document Reproduction Service No. ED231600)

The case study of the establishment of the rural community-based Sault Ste. Marie Area Public Schools' Alternative High School, emphasizing basic academic skills, and with a high Native American minority student population (16 years or older), shows that alienated youths, when given the opportunity and support, tend to show significant growth in academics and in social rehabilitation. Chapter I discusses demographics of the service area, local efforts to produce change, formation of the Neighborhood Education Center, selection of a program site, and selection and referral. Chapter II contains the evaluation of the Alternative High School Program (1974–1975): description of program objectives and evaluation criteria; and selection of evaluation models for program evaluation, needs assessment, program planning, and formative and summative evaluation. Chapter III examines various program results, i.e., services provided, recognition and exposure, student enrollment and disposition data, performance objective data, and conclusions and recommendations. The last chapter looks at the Alternative High School as a vehicle for educational and social change: factors influencing replication (individualized instruction, reward systems); conducive physical and human factors (low student-adult ratio, caring teachers, affective education, strong administrator); student and parent involvement in decisionmaking; vocationally oriented components, etc. Appendices list agencies and individuals who contributed to the program and a list of topics covered by "survival" classes; and data on students, staff, program costs, and test results.

*Markowitz, A., & Haley, F. (1973). *A bilingual Navajo curriculum project. Profiles of promise, No. 16.* Boulder, CO: Social Science Education Consortium. (ERIC Document Reproduction Service No. ED095073)

Ninety-six percent of the students who enter first grade in the San Juan School District, Blanding, Utah, cannot speak or understand English. They are Navajo and attend school on the Navajo reservation. A unique bilingual Navajo curriculum project has been developed to provide learning materials in the Navajo language to enable the child to learn when he first enters school, regardless of the language he speaks. Using filmstrips, cassette recordings, slides, 16mm films, book illustrations, and the printed word, the project translates the learning materials found in the classroom into the Navajo language. Major objectives of the San Juan Educational Program are to provide instruction in the language the child understands best so that he does not become retarded in the academic areas while learning the common instructional language; build a positive self-image of all children; and develop closer communication and understanding between parents and teachers. Evaluation shows that the Navajo children in the program have improved in their reading and in their attitudes toward school.

*Martens, B.A. (1993). The implementation of a dropout prevention program for at-risk secondary students (Doctoral dissertation, University of Arkansas, Fayetteville, 1992). *Dissertations Abstracts International, 53*(08), 2759A.

The impact of a 14-week dropout prevention program was assessed for 16 Native American and seven Anglo American students in grades nine through 11. All 23 students were experiencing academic difficulties, and most had excessive absences and behavioral problems, and came from single-parent homes. The students received tutoring in current coursework and participated in a weekly group counseling session. Counseling topics included social relationships, study skills, careers, motivation, importance of education, self-esteem, peer pressure, decisionmaking, and extracurricular activities. Parent involvement was addressed through increased communication between school and home. After 14 weeks the group showed a significant decrease in absences and a significant increase in grade point average. Academic self-concept improved significantly, but four other affective areas were unchanged.

*Mason, N. (1998). *Project research on the achievement of Aboriginal students in reserve schools: A success or disappointment.* Unpublished master's thesis, Brandon University, Manitoba, Canada. (ERIC Document Reproduction Service No. ED427901)

With the move to self-governance and the dismantling of Indian and Northern Affairs Canada (INAC), there is a need to know if Aboriginal education systems are providing superior, adequate, marginal, or unsatisfactory standards of education for their students. A study of 165 First Nations students attending a K–10 First Nations school sought to determine if Aboriginal students were more successful in a locally controlled reserve school, as opposed to a federal school. A student survey examined attitudes toward school, values, and sources of enjoyment. Measures of success at the school, which had come under First Nations control three years previously, included academic testing (CTBS), attendance, student suspensions and expulsions, age-grade deceleration, dropout rates, and graduation. Attendance improved significantly under Native control, compared to under INAC control. Student enrollment increased steadily from 1990 to 1997, an average of 25 students per year. Age-grade deceleration was reduced by 20.8 percent, primarily in the K–8 grade levels. Students were staying in school, and 34 older students who had been out of school for some time returned to finish. The paper includes 25 recommendations for increased school success, and suggestions for further research. (Contains 38 references and 34 data tables.)

*McBeath, G.A., McDiarmid, B., & Shepro, C.E. (1982). *Achievement and school effectiveness: Three case studies. A report to the Alaska Department of Education.* Fairbanks, AK: University of Alaska, Center for Cross-Cultural Studies. (ERIC Document Reproduction Service No. ED233840)

Case studies of high student achievement levels and school effectiveness from three rural Alaska Native schools, all offering some bilingual or bicultural classes, examine curriculum and school instructional practices, school social systems, student outcomes, aspects of school governance, and school-community relations. Chaputnguak High School, in the Yup'ik Eskimo village of Chefornak, enrolls 29 students in individualized, self-paced mastery programs and has the region's highest graduation requirements; school-community relations are excellent, students have positive attitudes and a sense of "ownership," and one-third to one-half of seniors enter college. Metlakatla elementary/secondary school, in a Tsimshian Indian village, has a history of local control and emphasizes teaching basics; student academic achievement, measured on standardized tests, is very good compared to other rural small schools in Alaska, but some questions exist about school effectiveness in meeting community needs. The 22 students (K–8) who attend Tanacross school are largely Athabaskan Indians; the school exists because parents felt their children were not well-served by being bused to school in another community, and took legal action to have their own school, which opened in 1980; school staff is exceptional, parents are satisfied, and student attitudes and test scores are excellent.

*McCarty, T.L., Wallace, S., Lynch, R.H., & Benally, A. (1991). Classroom inquiry and Navajo learning styles: A call for reassessment. *Anthropology & Education Quarterly, 22*(1), 42–59.

The paper describes experimental K-9 bilingual-bicultural curriculum in Navajo studies emphasizing open-ended questioning, inductive/analytical reasoning, and student verbalization in both small and large groups, and discusses reasons why it has been well received by teachers and students. Findings challenge conventional view that these students are nonanalytical, nonverbal learners. Suggests educational application of such "learning styles" can perpetuate patterns of learned dependence.

McDonald, L., Kratochwill, T.R., Levitt, J., & Young Bear-Tibbets, H. (1998, August). *Families and schools together: An experimental analysis of a parent-mediated intervention program for at-risk American Indian children.* Paper presented at the annual conference of the American Psychological Association, San Francisco, CA. Retrieved February 6, 2003, from http://www.wcer.wisc.edu/fast/research/research3c.pdf

The goals of this study were to adapt the FAST program in partnership with the College of Nenominee Nation; increase academic performance among American Indian children ages four to nine years; and reduce classroom problem behaviors correlated with school dropout. The multi-family group program called Families and Schools Together (FAST) was adapted with three American Indian Nations in Wisconsin. In collaboration with the College of Nenominee Nation, this parent involvement approach was adapted to express tribal values while maintaining its core components. Each Nation has a unique cultural history and norms, and each FAST team was made up of tribal members representing the mono-cultural group being served. The research incorporated between-group randomized experimental methodology. Specifically, 100 American Indian students at three schools were paired and then randomly assigned to the FAST vs. control condition. Pre, post, and one year follow-up data were collected by American Indian staff on multiple indicators of academic and behavioral performance using well-validated instruments. Of the families who attended FAST meetings at least once, 40 (80 percent) graduated from the seven FAST cycles during the three years. Qualitative surveys of FAST parents and teachers showed general satisfaction. Quantitative data analysis revealed differences in selected teacher- and parent-related student/child behaviors, favoring FAST participants, both immediately following the program intervention and nine to 12 months later. In addition, teachers regarded FAST participants as demonstrating greater academic competence than controls at the follow-up assessment. Results are discussed within the context of future research with American Indian children and FAST.

McInerney, D.M. (2001, April). *Relationships between motivational goals, sense of self, self-concept and academic achievement: A comparative study with aboriginal and non-aboriginal students.* Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA. (ERIC Document Reproduction Service No. ED456992)

An individual's school motivation and achievement are products of a complex set of interacting motivational goals, sense of self, and self-concept variables. Motivational goals may be differentially salient to individuals from different cultural backgrounds; and sense of self, including academic self-concept, may vary across cultural groups. This paper examines the nature of Australian Aboriginal students' motivational goals, the nature of their academic self-concepts, and their sense of self within school settings. Also examined are the relationships of these variables to intention to complete further schooling, affect toward school, valuing school, student achievement, and school attendance. The Inventory of School Motivation and the Self-Description Questionnaire were administered to 129 Aboriginal and 810 non-Aboriginal students in grades seven through nine in six rural and urban schools in New South Wales. The results suggest that Aboriginal students, even in remote locations, were motivated by the same motives and self-beliefs as influenced students from non-Aboriginal and largely urban backgrounds. These results tell a positive story about the capacity of Aboriginal children to do well at school given the right sort of motivational school environment and indicate the need for further research into the causes of the relatively poor academic performance and persistence of Aboriginal students.

*McInerney, D.M., & McInerney, V. (2000). *A longitudinal qualitative study of school motivation and achievement.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA. (ERIC Document Reproduction Service No. ED441815)

The goals and values students hold, how these are related to school motivation and achievement, and how these goals develop and change over a period of years in the context of cultural background, family, society, and school was studied with Native American and Anglo American students from a middle and high school in Phoenix, Arizona. Participants were selected for this longitudinal study when they were in grades seven and eight, and it was intended that they would be interviewed annually until they finished high school. Over three years, 48 first interviews, 26 second interviews, and 11 third interviews were conducted. The analyses of these interviews indicate that for Native American and Anglo American students alike, there are four needs that motivate them to strive for school success: seeking excellence in one's work; self-esteem; affiliation; and social concern. A number of the values and needs emphasized in the school setting, such as competition, group leadership, recognition, and rewards, are perceived to be relatively unimportant by these students. Many students did not have a clearly articulated sense of purpose for their schooling, and this lack should be addressed. (Contains two tables and 42 references.)

*McInerney, D.M., & Swisher, K.G. (1995). Exploring Navajo motivation in school settings. *Journal of American Indian Education, 34*(3), 28–51.

Over 500 Navajo high school students completed the Inventory of School Motivation, based on the personal investment model of motivation. Results suggest that the model's most salient elements for this group were sense-of-self components and one task component, striving for excellence. Combinations of variables were useful in predicting student performance and attitudes. (Contains 66 references.)

*McInerney, D.M., McInerney, V., Ardington, A., & De Rachewiltz, C. (March 1997). *School success in cultural context: Conversations at Window Rock.* [Preliminary Report]. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL. (ERIC Document Reproduction Service No. ED407202)

The goal theory of achievement motivation maintains that the goals stressed by schools influence children's self-efficacy and willingness to try hard. This paper examines the applicability of goal theory to a Navajo school and community and widens the focus to encompass a range of potential culturally relevant goals. Interviews were conducted at Window Rock High School on the Navajo Reservation (Arizona) with 20 students in grades eight through 12, 10 Navajo community members, and nine Navajo teachers. In general, interviewees believed that school-based education is important in that it assists students to develop self-sufficiency and competitive skills that will ultimately benefit the community. However, competitiveness is not regarded as merely a desire to win at all costs; it is tempered by a strong sense of affiliation to the Navajo group in that individual achievement is not sought at the expense of the community. Student motivation to do well at school was strongly linked with social concern and affiliation. Overwhelmingly, parents and extended family were the prime referent groups in influencing student progress at school. A generally supportive home environment was seen as essential for educational success. The most frequently cited inhibitors of school motivation were family substance abuse, gang behavior, student substance abuse, and pregnancy. Respondents scrutinized the Inventory of School Motivation, agreed that all items and scales were relevant to the Navajo educational context, but offered differing Navajo perspectives on the items measuring competitiveness and group leadership. The results suggest that Navajo and Western cultures share many similar values related to education. Contains 25 references and interview excerpts.

*McInerney, D.M., Roche, L.A., McInereney, V., & Marsh, H.W. (1997). Cultural perspectives on school motivation: The relevance and application of goal theory. *American Educational Research Journal, 34*(1), 207–236.

Whether goals held by students from diverse cultural backgrounds differ and the relationship of these goals to school motivation and achievement were studied with 2,156 Australian (Anglo, immigrant, and Aboriginal), 529 Navajo, and 198 Canadian Montagnais Betsiamite Indian secondary school students. Cross-cultural and educational implications are discussed.

McIntyre, J., Ardler, W., Morley-Warner, T., Solomon, N., & Spindler, L. (1996). *Culture matters. Factors affecting the outcomes of participation in vocational education and training by Australian indigenous peoples.* Sydney, Australia: University of Technology, Research Centre for Vocational Education and Training. (ERIC Document Reproduction Service No. ED419985)

The factors affecting the outcomes of indigenous Australians' participation in vocational education and training (VET) were examined in a study in which seven Aboriginal researchers in five Australian states and territories interviewed 70 indigenous Australians enrolled in VET and 48 coordinators and teachers in technical and further education (TAFE) colleges, independent Aboriginal providers, and universities with significant programs for Aboriginal and Torres Strait Islander people in 1994. The study focused on pathways to VET; learners' issues and concerns;

institutional issues and provider views; literacy, language, and learning; and effective course delivery in VET. Seven guiding principles for improved VET course delivery to indigenous Australians were identified. VET providers were encouraged to adopt the concept of course delivery as a cross-cultural activity as their rationale for planning, developing, and evaluating programs for indigenous Australians. (The bibliography contains 51 references. Appended are the following: educational indicators for Aboriginal and Torres Strait Islander profile for local government areas in eastern Australia; learner interview schedule; summary of learner characteristics; institution interview schedule; list of TAFE institutions with the highest enrollments of Aboriginal and Torres Strait Islander people in 1993; summary of institutions interviewed; and examples of data management layouts.)

McKeever, W., Hunt, L., Wells, S., & Yazzie, C. (1989). Language laterality in Navajo reservation children: Dichotic test results depend on the language context of the testing. *Brain and Language, 36*(1), 148–158.

This study assessed language lateralization in 40 Navajo and 20 Anglo fifth-graders, using a dichotic consonant-vowel task. One group of Navajos was tested by an experimenter who spoke only Navajo with them. The other Navajo group and the Anglo group were tested by an experimenter who spoke only English to them. Strong right ear advantages (REAs) were obtained for the Anglo group and for the Navajo group tested by the Navajo-speaking experimenter. The Navajo group tested by the English-speaking experimenter showed minimal REAs. Results are not consistent with the view that Native Americans are more right hemisphere dominant as a function of an appositional (J. Vaid, 1983) mode of language and thought.

*McLaughlin, D. (1992). *When literacy empowers: Navajo language in print.* Albuquerque, NM: University of New Mexico Press.

This book presents an ethnographic study of literacy practices and beliefs about Navajo and English usage in one Navajo community. Throughout the book, Spolsky's structuralist notion of "special diglossia" on the Navajo Reservation--Navajo for most oral communication and English for nearly all written purposes--is contrasted with Street's "ideological model" of literacy, which relates literacy functions and beliefs to the requirements of local institutions and ideologies as they reflect particular requirements of the more powerful mainstream society. Chapter 1 reviews traditions of sociolinguistic analysis and previous research on Navajo and English usage. Chapter 2 provides a historical background and description of the community from the different perspectives of major actors in local institutional settings: trading post, chapterhouse (center of local tribal government), mission church, and community school. This chapter also details the history and development of the school's bilingual education program. Chapter 3 describes ways that the trading post and chapterhouse "script" uses for English print, while Chapter 4 describes uses for written English and Navajo scripted by the community school and church. The concluding chapter presents survey data on the community's literacy-related practices and beliefs and discusses study implications in terms of pedagogical practice in Navajo schools and theoretical notions about the relationship between literacy and society. Appendices describe a demonstration project in applied literacy and include survey questionnaires in English and Navajo. (Includes chapter notes, an extensive bibliography, and an index.)

*McLaughlin, T.F., Williams, R.L., Cady, M., & Bement, G. (1982). Reading achievement in the northern Cheyenne behavior analysis model of follow through. *Reading Improvement, 19*(2), 111–113.

Reports on a study that evaluated the effectiveness of Project Follow Through programs on the Northern Cheyenne Indian Reservation. Reveals continued improvement in reading achievement scores at all grade levels studied.

McLean, D.L. (1997). Rural Alaska Native perceptions of cultural transmission: Implications for education. *Journal of American Indian Education, 36*(3), 16–26.

Interviews with 41 Alaska Native parents examined their perceptions of how children learn the skills and traditional knowledge needed to survive through subsistence activities. Implications and recommendations are discussed for developing school programs and curricula that incorporate traditional knowledge, cultural values, and teaching methods.

*Medearis, L.C. (1996). Young Seminoles and Natural Math. *Journal of Educational Issues of Language Minority Students, 16,* 49–55.

This two-year research project with the children and families of the Oklahoma Seminole Nation Head Start aimed to encourage emerging math literacy in preschool children. Standards-based packets of simple ideas and easy at-home activities were distributed to families on a monthly basis, with family training provided at the preschool and through home visits. Preschool students exposed to the program scored higher on kindergarten screening tests than students in prior years, and their older siblings (who had also participated) showed improvements in their mathematical skills. The researcher describes experiences and mistakes made in attempting to develop culturally relevant materials.

Murtagh, E.J. (1982). Creole and English used as languages of instruction in bilingual education with Aboriginal Australians: Some research findings. *International Journal of the Sociology of Language: 36*, 15–33.

This study investigated whether a bilingual program using Creole and English as languages of instruction would facilitate the learning of both Standard English and Creole among 58 Creole-speaking Aboriginal-Australian children. Students were in their first through third years of school; half of the students received instruction only in English, and the others received half their instruction in Creole and half in English. Oral proficiency (using discrete-point tests, tests of general communicative ability, and listening comprehension tests) was measured to assess the effectiveness of the two programs. Results show the superiority of the bilingual method. Students in that program showed more proficiency in both Creole and English than students in the monolingual program. Also, bilingually instructed students demonstrated greater success in separating the two languages and showed a more positive attitude toward speakers of Standard English.

*Nelson, S., & Clark, R. (1977). *Pierce County Indian education program, Educational Service District #121, Tacoma, Washington. 1976-77 final evaluation report.* Portland, OR: Northwest Regional Educational Laboratory. (ERIC Document Reproduction Service No. ED145997)

Comparing program objectives with program outcomes, four program components targeted at 1,100 American Indian students in nine school districts in Pierce County, Washington, were evaluated. Program objectives operationalized by an 11-member staff including nine specialists and one coordinator were to develop basic skills via tutoring services for students identified by testing as needing remedial classes; cultural knowledge via the collection and/or publication of tribal bibliographies, books, films, records, legends, tribal artifacts, etc.; career counseling by surveying Indian students' interests and then distributing the results to guidance counselors in the high schools; and court liaison activities to provide linkage between the Pierce County Juvenile Court and the Indian home. Program evaluation indicated: substantial (academic improvement by one-tenth of one grade for every 20 days) improvement in the basic skills component, though it was suggested that standardization of the assessment instruments across districts would further analysis; general success in providing a variety of cultural experiences to the majority of students in the target group, though two districts received very few services; little tangible evidence of success in the career counseling component, but there appeared to be a high level of activity in this component which may eventuate in more successful post–high school experiences; the coordinator and the specialists were actively involved in court liaison activities but that these services would be terminated due to time and legal issues.

Nicholas, S.E. (1991). Hopi education: A look at the history, the present, and the future. (Master's thesis, University of Arizona, 1991.) *Masters Abstracts International, 30*(02), 195.

The dismal national statistics of academic achievement by Native American students in the Anglo American educational system has long been a source of federal and academic concern. Studies and literature suggest that Native American culture and language highly influence academic achievement. This thesis investigates this influence by analyzing Hopi Indian experiences within the Anglo-American educational system to understand what impact the larger processes of federal Indian policy have had on Indian people. Parents and teachers in Hopi Reservation schools were interviewed about their personal educational experiences and perceptions of current Hopi education. The interviews focused on the unique educational situation Hopi students are placed in as a result of their culture and language. The findings confirm the influential role of culture, yet it continues to be tragically undermined and overshadowed by how the bureaucratic processes of the educational system and institutions continue to operate in educating Hopi and other Indian children.

Novick, R. (1996). *Developmentally appropriate and culturally responsive education: Theory in practice*. Portland, OR: Northwest Regional Educational Lab. (ERIC Document Reproduction Service No. ED397985)

The key to developmentally appropriate practices is to let a child construct his or her own knowledge through interactions with the social and physical environment. Because the child is viewed as intrinsically motivated and self-directed, effective teaching capitalizes on the child's motivation to explore, experiment, and make sense of his or her experience. This report, which focuses on these points, attempts to provide a synthesis of the literature relevant to developmentally and culturally appropriate practices. It also discusses future plans of the Child and Family Program of the Northwest Regional Educational Laboratory. This report is divided into 10 main topics: developmentally appropriate practices: an overview; early literacy; integrated curriculum: themes, projects, webs, and inquiry; mathematics: basket of facts or search for meaning; coverage, multiple intelligences, and standardized tests; multiage grouping: a community of learners; bringing it all back home: family/school/community partnerships; enhancing continuity for children and families; culturally responsive teaching; and children with disabilities.

*Omizo, M.M., & Omizo, S.A. (1989). Art activities to improve self-esteem among Native Hawaiian children. *Journal of Humanistic Education and Development, 27*(4), 167–176.

The study investigated the effects of group counseling using art activities in improving self-esteem among Hawaiian elementary children (N = 50). Found subjects who participated in counseling had higher Social Peer-Related and Academics/School-Related Self-Esteem scores than children who did not participate.

*Omizo, M.M., Omizo, S.A., & Kitaoka, S.K. (1998). Guided affective and cognitive imagery to enhance self-esteem among Hawaiian children. *Journal of Multicultural Counseling and Development, 26*(1), 52–62.

The study investigated the efficacy of guided affective and cognitive imagery in enhancing self-esteem among children of Hawaiian ancestry. Children (N = 60) who participated in 10 weekly group sessions had significantly higher posttest scores on two self-esteem measures when compared to the control group.

*Ovando, C.J. (1994). Changes in school and community attitudes in an Athabaskan village. *Peabody Journal of Education, 69*(2), 43–59.

This paper reports a study that examined the attitudes of students, parents, and teachers toward school and community issues in Nulato, a remote Athapaskan village, noting changes in attitude between 1983 and 1992. Results suggested the community valued the maintenance of cultural heritage, and cultural and language restoration were becoming high priorities in 1993. (EJ490166)

Paciotto, C. (2000). Measuring language dominance and bilingual proficiency development of Tarahumara children. In J. Reyhner, J. Martin, L. Lockard, & W.S. Gilbert (Eds.), *Learn in beauty: Indigenous education for a new century* (pp. 45–64). Flagstaff, AZ: Northern Arizona University. (ERIC Document Reproduction Service No. 445868).

This paper examines the language dominance and oral bilingual proficiency of Tarahumara-Spanish speaking students from Chihuahua, Mexico, within the framework of Cummins' model of bilingual proficiency development. Cummins' model distinguishes between basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP). The children in this study lived in a Tarahumara village and attended a weekday boarding school in which Spanish was the language of instruction and Tarahumara was used as a support in the classroom. Bilingual interviews were conducted with 66 children in grades one through six using the Entrevista Bilingue, in which picture stories elicited bilingual dialogue and served as the basis for free narration tasks. Data analysis showed that 29 percent of the children were bilingual, Tarahumara-dominant, and 64 percent were balanced bilinguals who showed comparable, advanced, or native-like levels of conversational proficiency and minimally acceptable text production in both languages. The results indicate that exposure to Spanish-only instruction did not result in attrition of Tarahumara conversational proficiency. Findings also indicate that the constructs of BICS, CALP, and language interdependence in the oral domain are applicable to a context of diglossia, and that the Entrevista Bilingue can be a useful tool for teachers.

Pohlmann, B.E. (1990). Ethnicity, class, and culture: Multicultural education in the rural Northwest (Doctoral dissertation, University of California, Berkley, 1989). *Dissertation Abstracts International, 50*(10), 3278.

This study examines the effects of culture, class, and ethnicity on school performance in a multicultural classroom in a rural elementary school in the Pacific Northwest. The academic and behavioral performances of 29 eight- to 11-year-old white and Native American students are examined using techniques of participant observation, formal interviews, and analysis of standardized test scores. Contrary to expectations, the Native American students were academically competitive with the local white students. It was found that the Native American students did not view academic achievement as being part of the white cultural domain. The cultural revitalization of the local tribe was seen as the single contributing factor to this phenomenon. The concept of the "equivalent status" of the local Native American population vis-à-vis the white population is advanced as an explanation of the academic competitiveness of the Native American students. Reviewing distinctions of minority status with regard to contemporary studies of caste, class, ethnicity, and achievement, it is suggested that future research on the education of non-white students focus on both the instrumental and affective meanings of education for the student.

Prater, G., Rezzonico, A., Pyron, R., Chischille, J., Arthur, V., & Yellowhair, B. (1995). Effective teachers: Perceptions of Native American students in rural areas. In D. Montgomery (Ed.), *Reaching to the future: Boldly facing challenges in rural communities. Conference proceedings* (pp. 358–361). (ERIC Document Reproduction Service No. ED381332)

This paper examines perceptions of Native American students regarding effective practices of non-Native teachers. A survey of students in grades three through 12 in three rural school districts on the Navajo Reservation (Arizona) questioned 148 Navajo students and 10 non-Native students. The sample included 28 special needs students (17.7 percent). The survey consisted of open-ended questions regarding what kind of teacher students learned the most from, what students would do in the classroom if they were teachers, qualities of ideal teachers, what teachers do in the classroom that discourages learning, student preferences for English-only or bilingual teachers, and the degree to which teachers should be aware of students' cultural background. Results reveal that students learn more from hands-on projects and teachers who encourage varied means of learning. Students also stressed that it was important for teachers to treat students with respect and to teach responsibility. Students indicated that if they were teachers they would teach patience and honesty, tolerance, and the golden rule. Students felt that the most important teacher qualities were respect, kindness, positive attitude, patience, and sense of humor, and that teachers should avoid talking too fast, making fun of Native culture, and giving boring lectures. Although many students felt that a bilingual teacher was not necessary, many others desired to learn more about their Native language. An overwhelming number of students felt that teachers needed to be more sensitive to Native culture.

*Prucha, F.P. (Ed.) (2000). *Documents of United States Indian policy* (3rd ed.) Lincoln, NE: University of Nebraska Press.

The 238 documents printed in this volume illustrate the history of the United States government and the American Indians from the founding of the nation to the end of the 20th century. They are a collection of official and quasi-official records that marked significant formulations of public policy. The documents, presented in full text or extracts, include federal legislation, court decisions, treaties, and administrative actions. Documents related to education include the Civilization Fund Act, 1819; Indian Commissioner statements on civilizing the Indians and on cooperating with Religious Societies, 1881–1882; Use of English in Indian Schools, 1887; Supplemental Report on Indian Education, 1889; Inculcation of Patriotism in Indian Schools, 1889; Indian School Superintendents as Indian Agents, 1893; Indian Commissioner Leupp on Reservation Schools, 1907; Meriam report, 1928; Report on Indian Education, 1969; Indian Education Act, 1972; Comprehensive Employment and Training Act, 1973; Student Rights and Due Process Procedures, 1974; Indian Self-Determination and Education Assistance Act, 1975; Tribally Controlled

Community College Assistance Act, 1978; Education Amendments Act of 1978, Title XI: Indian Education; Indian Child Welfare Act, 1978; Report on BIA Education, 1988; Tribally Controlled Schools Act of 1988; National Museum of the American Indian Act, 1989; American Indian and Alaska Native Education, Executive Order 13096, 1998; and various treaties. (Contains an index, a selected bibliography, and a list of federally recognized Indian tribes as of March 2000.)

Ramos, F. (2001). Teachers' opinion about the theoretical and practical aspects of the use of Native language minority students: A cross-sectional study. *Bilingual Research Journal, 25*(3), 357–374.

Surveys completed by 218 K–8 teachers in two southern California school districts examined teacher opinions about using language minority students' native language for their instruction. Support for practical implementation was less positive than for the theoretical principles. No clear predictors of attitudes toward the issue were found, including grade level taught.

Reyhner, J. (1992). American Indians out of school: A review of school-based causes and solutions. *Journal of American Indian Education, 31*(2), 37–56.

Research is explored that indicates a number of factors associated with high dropout rates among Native American students. Seven critical factors are examined in detail, including the increasing size of U.S. schools, especially those with more than 1,000 students; uncaring teachers who employ passive teaching methods; and inappropriate curriculum. In addition, students are faced with "tracked" classes, which is a system of placing Indian students in a non-college bound vocationally oriented curriculum. One other factor that contributes to Indian students dropping out is the lack of parental involvement in their children's education.

Reyhner, J., Cantoni, G., St. Clair, R., & Yazzie, E.P. (1998). *Revitalizing indigenous languages*. Paper presented at the Annual Stabilizing Indigenous Languages Symposium Flagstaff, AZ: Northern Arizona University. Center for Excellence in Education. (ERIC Document Reproduction Service No. ED428922)

This volume of conference papers examines issues and approaches in the revitalization of American Indian and other indigenous languages. Sections discuss obstacles and opportunities for language revitalization, language revitalization efforts and approaches, the role of writing in language revitalization, and using technology in language revitalization. Following an introduction, "Some Basics of Indigenous Language Revitalization" (Jon Reyhner), the 11 papers include "Some Rare and Radical Ideas for Keeping Indigenous Languages Alive" (Richard Littlebear); "Running the Gauntlet of an Indigenous Language Program" (Steve Greymorning); "Sm'algyax Language Renewal: Prospects and Options" (Daniel S. Rubin); "Reversing Language Shift: Can Kwak'wala Be Revived?" (Stan J. Anonby); "Using TPR-Storytelling To Develop Fluency and Literacy in Native American Languages" (Gina P. Cantoni); "Documenting and Maintaining Native American Languages for the 21st Century: The Indiana University Model" (Douglas R. Parks, Julia Kushner, Wallace Hooper, Francis Flavin, Delilah Yellow Bird, Selena Ditmar); "The Place of Writing in Preserving an Oral Language" (Ruth Bennett, Pam Mattz, Silish Jackson, Harold Campbell); "Indigenous Language Codification: Cultural Effects" (Brian Bielenberg); "Enhancing Language Material Availability Using Computers" (Mizuki Miyashita, Laura A. Moll); "The New Mass Media and the Shaping of Amazigh Identity" (Amar Almasude); and "Self-Publishing Indigenous Language Materials" (Robert N. St. Clair, John Busch, B. Joanne Webb). Contains references in most papers, author profiles, and a poem, "Repatriated Bones, Unrepatriated Spirits" (Richard Littlebear).

*Rindone, P. (1988). *Factors affecting achievement motivation and academic achievement of Native American students.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA. (ERIC Document Reproduction Service No. ED302370)

This study examined the backgrounds of Navajo college graduates in order to identify factors contributing to Native Americans' academic motivation. A questionnaire mailed to 200 randomly-selected Navajo college graduates investigated family characteristics, educational experience, socioeconomic status, language use, and demographic data. Among the respondents were 80 women and 27 men with a mean age of 33; 87 percent had been born on the reservation. Most respondents came from families that spoke Navajo at home and practiced the Navajo Way. More than half the parents completed less than six years of schooling, and most annual family incomes were less than $10,000. About half the respondents spoke no English at school entry, and most attended schools that taught primarily in English. Respondents indicated that their own motivation and encouragement from family were the most important factors contributing to their high educational attainment. About half said that a teacher had encouraged them to succeed in school. The paper contends that Native Americans and other minority groups have aspired to high academic achievement but have not until recently had the opportunity to act on those aspirations. Whereas other studies have correlated achievement and socioeconomic status, the present study suggests that a stable family life with traditional values may be a more important influence in the achievement of Navajo students. The study contains 19 references.

*Rohner, R.P. (1965). Factors influencing the academic performance of Kwakiutl children in Canada. *Comparative Education Review, 9*(3), 331–340.

Social and cultural factors affecting the academic performance of Kwakiutl children were studied in the isolated Kwakiutl village on Gilford Island, British Columbia. Poor educational achievement of Kwakiutl children was indicated by higher median age per grade than is characteristic of other provincial schools and poor performance on two intelligence tests. Two sets of factors contribute to this situation: students' cultural background, which is inconsistent with school assumptions and demands, and teachers' attitudes toward and relationships with the community. Sociocultural conflicts include the permissive, informally structured, bilingual environment of the home versus the authoritarian, formally structured, English-only environment of the school; experiential learning in the community based on observation and manipulation versus language-based learning in school; and values associated with time, independence, compliance, and aggression. Repeated failures or bad experiences in school cause students to approach school with anxiety or distaste and drop out at the minimum age. In addition, school is not seen as contributing anything important to students' present or future lives. Teachers themselves have a profound influence on the progress of Indian children. Teachers of Kwakiutl children have been inconsistent in their demands and expectations, have a high rate of turnover, and rarely have close personal contacts with the community. Finally, large classes containing many grades managed by a single teacher create problems for both pupils and teachers.

*Rosier, P., & Farella, M. 1976). Bilingual education at Rock Point--Some early results. *TESOL Quarterly, 10*(4), 379–388.

This article describes the English-Navajo bilingual education program at Rock Point, Arizona, and reports on the results of various reading achievement tests illustrating that learning to read in one's mother tongue will result in better reading skills, and will improve second language reading skills.

*Rosier, P., & Holm, W. (1980). *The Rock Point experience: A longitudinal study of a Navajo school program (Saad Naaki Bee Na'nitin).* Washington, DC: Center for Applied Linguistics. (ERIC Document Reproduction Service No. ED195363)

Conducted from 1975 to 1977, this reading achievement study examined the effects of initial literacy in Navajo on later reading in English and the effects of initial arithmetic instruction in Navajo on later arithmetic instruction in English by comparing two groups of Navajo students, both of whom began school essentially monolingual in Navajo. The bilingual group consisted of students from Rock Point Community School who had first been taught to read in Navajo and then, at the second-grade level, had also been taught to read in English. The second group consisted of students from a selected sample of BIA schools who had been taught to read in English-only in English as a Foreign Language (EFL) direct method programs. The study utilized existing programs in carefully selected schools. Students who had received bilingual instruction scored higher on standardized achievement tests than did students at comparable schools who had received English-language-only instruction and better than earlier Rock Point students who had received English-language-only instruction. Also, the bilingual students who were taught arithmetic in Navajo and English until the end of the second grade had significantly higher mean scores on the Total Arithmetic subtests than did the EFL direct method group at grades above the fourth. The major portion of the monograph consists of Appendix A, which describes other related studies and Appendix B, which details the Rock Point Study's methodology, findings of the study, and a statistical analysis.

*Rubie, C. (1999). *Kia Kaha: Improving classroom performance through developing cultural awareness.* Paper presented at the joint conference of the Australian Association for Research in Education and the New Zealand Association for Research in Education, Melbourne, Australia. (ERIC Document Reproduction Service No. ED441651)

A study of 24 Maori children in grades three through six who were invited to perform at a children's festival in Turkey and two control groups (control 1, n = 24; control 2, n = 23) of Maori children who did not participate in the festival examined the effect of an intense cultural program on children's self-esteem, locus of control, and academic performance. Literature related to adventure programs and developing ethnic identity was drawn upon extensively in structuring the Maori cultural training program. The study group and two control groups were pretested on a self-esteem scale, a locus of control scale, and a range of academic measures. Posttesting was completed one year later. A subgroup of the Maori children, their caregivers, and teachers was also interviewed regarding their experience of the program. The standardized testing showed that children in the Maori Culture Group made significant positive changes in self-esteem and locus of control, changes not matched in the control groups. Both parents and teachers noted developments in the social skills, confidence, and social maturity of the Maori children. Although the group activities were not theoretically related to the academic activities assessed by the standardized tests, a facilitative effect on academic achievement was suggested. Moreover, both the results of testing and the interviews with the Maori children, their caregivers, and teachers suggested positive developments in these children's academic performance, a more positive attitude toward school, improved organizational skills, and more time spent on their homework. (Contains 37 references and six tables.)

*Rudin, C. (1989). *Omaha language preservation in the Macy, Nebraska, Public School.* Paper presented at the meeting of the Mid-America Linguistics Conference, Cedar Falls, IA. (ERIC Document Reproduction Service No. ED347785)

A Native language renewal program at the Macy, Nebraska, Public School is described that is designed to preserve Omaha, a Native American Indian language that is only a generation away from extinction. At the time of this research, only about 100 fluent Omaha speakers lived on the Omaha Reservation in Nebraska. The language and culture program, instituted in 1970, has employed various instructional techniques and methodologies, including immersion, memorization of words and phrases, and publication of student-authored stories in English and Omaha. The program has suffered from a lack of consistency; frequent changes in funding, personnel, and curriculum; and a lack of attention to syntax, morphology, and conversational competence. Although the program has not been successful in preserving Omaha as a living spoken language, it has helped to improve tribal solidarity and pride. Nearly every child knows at least some Omaha words and phrases, and the classes have provided satisfaction and a sense of pride for children and elders. In addition, many teachers at the school believe that the program has led to better attitudes and academic performance for at least some students. The program may enhance Omaha cultural survival and enrich the educational experience of the children.

Ruiz, R. (1995). Language planning considerations in indigenous communities. *The Bilingual Research Journal, 19*(1), 71–81.

The paper examines federally funded bilingual education programs for American Indians and Alaska Natives from a language planning perspective. It is argued that federal programs represent an exoglossic (externally oriented) policy that can contribute to language loss. Indigenous communities need to develop endoglossic (community-oriented) policies that foster linguistic and cultural maintenance.

Schwab, R.G. (2001). VET-in-school for indigenous students: Success through "cultural fit." In *Research to reality: Putting VET research to work. Proceedings of the Australian Vocational Education and Training Research Association Conference.* Alexandria, New South Wales, Australia: AVETRA Conference Proceedings. (ERIC Document Reproduction Service No. ED456313).

Two innovative approaches to delivering vocational education and training (VET) in schools were examined to identify ways of helping Australia's indigenous students achieve academic success by ensuring a close cultural fit between course content and the realities of local employment opportunities. The first VET-in-School program, which was located in New South Wales, provided three levels of health care studies in courses that were carefully structured to include the entire necessary curriculum to meet accreditation standards and emphasize literacy and numeracy skills while explicitly acknowledging that Aboriginal English is respected as a functional form of English communication. The second program, which was located in Western Australia, offered a hospitality and tourism training program that combined a cluster of accredited general secondary studies subjects in years 11 and 12 with a selection of Australian Qualifications Framework modules related to hospitality and tourism and hands-on training in the workplace. Both courses proved successful in attracting and retaining indigenous students. Factors credited with the programs' success included the following: opportunities for community-based education and training; community relevance; a commitment to Aboriginal employment; balancing of expectations from two cultures; a willingness to push the boundaries; and the presence of leadership and a committed, competent staff.

*Sears, N.C., & Medearis, L. (1992, October). *Natural Math: A progress report on implementation of a family involvement project for early childhood mathematics among children of the Oklahoma Seminole Head Start and Boley Head Start.* Paper presented at the meeting of the Rocky Mountain Research Association, Stillwater, OK. (ERIC Document Reproduction Service No. ED352172)

The Natural Math project was undertaken to encourage parents of Native American and African American preschool and kindergarten children to engage in math activities and games at home. Natural Math also attempted to integrate Seminole culture into math materials. The project originally included only Seminole preschool and kindergarten children. Later, Boley school, located in a rural black community, petitioned for inclusion. Natural Math activities included the provision of start-up supplies and other materials to the children and their families; an initial meeting to explain the project and the proper use of the materials; a portable computer lab; a math fair; and the distribution of materials for the summer. After their participation in the project, former Head Start children were tested for verbal, math, and social skills, and parents were surveyed. Participating students had higher raw scores than the students of the previous year. At Boley School, Natural Math materials were introduced to the children before they were given to parents, with several advantages resulting. An extensive literature review covers adult literacy and communication among Native Americans; a Native American perspective of giftedness; the role of culture in education; demographic and academic achievement data for six tribes; and Native American early childhood education and Head Start programs. A 36-item bibliography is included.

*Silverman, R.J., & Demmert, W.G., Jr. (1986). *Characteristics of successful Native leaders.* Unpublished manuscript. (ERIC Document Reproduction Service No. ED269208)

Characteristics were profiled for 40 southeast Alaskan Haida, Tlingit, and Tsimshian tribal members in positions of responsibility in business, government, or a profession. Respondents had found school easy, did well, liked school, and participated in school-related activities. Positive influence and encouragement of family members, especially mothers, were important success factors. Families viewed school as important and expected children to do well. More than half the respondents indicated teachers as a key influence outside the immediate family, with advice, push to action, and role model the most frequent forms of encouragement. Positive learning experiences outside school were important, especially experiences involving social skills. Family socioeconomic level had a positive effect on future success. Family members of 80 percent of respondents were clan, church, or community leaders or were recognized for some skill. Establishing goals was important to success, with deciding to go to college the most common goal. "Making a contribution to society" and "being at peace with oneself" were the most used definitions of success. Respondents felt they had had many opportunities to succeed, but had encountered barriers of racism and lack of money. Applications to educational situations are suggested. Questionnaire, tabulated responses, and respondents' comments form the appendix.

Skinner, L. (1996). Teaching through traditions: Incorporating Native languages and cultures into curricula. In *Indian nations at risk: Task force commissioned papers.* Washington, DC: U.S. Department of Education, Indian Nations At Risk Task Force. (ERIC Document Reproduction Service No. ED343764)

Ethnocentrism has permeated the European American educational establishment for nearly 500 years. Native students have been subjected to a barrage of assimilation tactics designed to destroy their cultures and languages. Only 206 Native languages remain (about a third of the original number), and about 50 of these are near extinction. Language destruction promotes cultural disintegration. Among the factors contributing to the poor academic achievement of Native students are cultural differences between home and school, ignorance of Native culture among school staff, differences in language and values between teachers and students, culturally based Native learning styles, and culturally biased testing. Community participation and community control of education are critical to developing culturally relevant curricula and making education responsive to Native students' needs. Communities and educators can draw on the experiences of other tribes that have developed successful programs incorporating the local linguistic and cultural context. Other strategies include community involvement in curriculum revision and instructional materials selection; tribal education codes and board of education policies that are consistent with state and federal goals; textbook review; teacher education programs that prepare teachers to work with culturally and linguistically diverse populations; integrating Native history into the core curriculum; encouraging participation of elders and intergenerational learning experiences; and empowering students to become environmental stewards.

Slaughter, H.B. (1997, March). *Functions of literacy in an indigenous second language: Issues and insights from an ethnographic study of Hawaiian immersion.* Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL. (ERIC Document Reproduction Service No. ED410752)

This study explored the functions of literacy in the Hawaiian language that may be realized in an indigenous language immersion program when the indigenous language is a second language with severely restricted use in the wider community. It also examined the connections between Hawaiian language use, the local culture in Hawaii, and development of a broader base of Hawaiian literacy in the future. Data were drawn from a longitudinal study, begun in 1987, of succeeding cohorts of sixth-grade students and their teachers and parents. The latest evaluation involved 143 Hawaiian Language Immersion program (HLI) students and 50 English-medium fifth- and sixth-graders. The report details the students' perspectives on the functions of Hawaiian literacy in an immersion setting, including perceptions of Hawaiian as a medium of instruction and language of survival in school; ceremonial, aesthetic, and cultural dimensions of the language; students as creators of Hawaiian stories and text; students as readers of Hawaiian text; students as translators; bilingual empowerment through Hawaiian and English literacy; and advantages to being bilingual.

*Slaughter, H.B., & Lai, M. (1994). *Indigenous language immersion as an alternative form of schooling for children of Hawaiian ancestry: Lessons from a six-year study.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA. (ERIC Document Reproduction Service No. ED375637)

The Hawaiian Language Immersion program (HLI) is described and evaluated. HLI began in 1987 with two small classes on two islands and within six years had grown, in response to parent interest, to serve 621 students in grades K–7 in six schools on five islands. Participating students are taught entirely in Hawaiian until grade five; in grades five and six one hour a day of instruction is in English, and immersion may continue into grade seven. The report contains an assessment of the program based on the status of the first sixth-grade cohort of participating students. Data used include qualitative reading assessment in Hawaiian and English; reading, writing, and mathematics achievement data, tested in English; mathematics achievement, tested in Hawaiian; longitudinal data; comparison of participant and nonparticipant attitudes; and student, parent, and teacher interview data. An introductory section outlines positive and negative implementation factors influencing the first cohort, and then results from the analyses listed above are summarized. Recommendations include assurance of adequate curriculum materials in the case of program expansion; reconsideration of the policy of teaching English language arts in Hawaiian; further consideration of participant interaction with nonparticipating students; continued support for the successful programs; and better planning for students with special needs.

*Smith, D.C., Leake, D.W., & Kamekona, N. (1998). Effects of a culturally competent school-based intervention for at-risk Hawaiian students. *Pacific Educational Research Journal, 9*(1), 3–22.

The paper reports the effects of an intervention designed to foster emotional, academic, and interpersonal skills on 22 elementary school students at risk of emotional and behavioral disorders. The intervention, which was designed to be culturally competent, was associated with decreased clinical symptoms and improved academic and behavioral performance.

Smith, K.J. (1992). Using multimedia with Navajo children: An effort to alleviate problems of cultural learning style, background of experience, and motivation. *Reading and Writing Quarterly: Overcoming Learning Difficulties, 8*(3), 287–294.

Native American students have performed far below national norms on test of reading ability. Researchers' explanations have included a lack of schema for the kinds of materials (and tests) that the children are asked to read, a lack of immediate purpose for academic learning, and cultural differences in learning styles. To address these difficulties, the Tuba City Boarding School on the Navajo Reservation developed multimedia programs. Using a hypertext computer program, reading improvement programs were developed with familiar context. Students were taught to use hypertext to develop their own productions. Thus, an attempt is being made to address the problem of unfamiliar content; the cooperative, noncompetitive nature of Navajo learning style; and the problem of lack of immediate purpose.

*Stairs, A. (1987, April). *Evaluating the role of first language in Native education: Developmental results in a Canadian Inuit setting.* Paper presented at the annual meeting of the American Educational Research Association, Washington, DC. (ERIC Document Reproduction Service No. ED283394)

This study of language learning in Arctic Quebec examines relationships between early Inuktitut competence and later learning of English as a second language, general and local characteristics of Native language competence, and early Inuktitut instruction and later competence. It also looks at the reliability of Native educators' assessment of language competence and the identification of features of Inuktitut competence for use in improving Native language instruction. Participants in both phases of the study numbered approximately 90 Inuit children. As students in grades three and four they provided Inuktitut writing samples that were compared with English samples written a year later. Each group of samples was organized by knowledgeable raters into "strong," "average," and "weak" categories. In general, it was found that the Native language situation in the region is not homogeneous, with settlement groups varying in both proficiency and style of Inuktitut; a nonlinear relationship exists between fluency and complexity in judgments of Inuktitut competence, and apparently in Inuktitut development; and a strong correlation exists between early Inuktitut proficiency and later English proficiency, both individually and within settlements. However, facts and policy resulting from such research should be tempered with consideration for the community's linguistic and social values.

*Stiles, D.B. (1997). Four successful indigenous language programs. In J. Reyhner (Ed.), *Teaching indigenous languages. Selected papers from the Annual Symposium on Stabilizing Indigenous Languages.* Flagstaff, AZ: Northern Arizona University. (ERIC Document Reproduction Service No. ED415079)

This paper examines four indigenous language programs to compare common components, problems, and outcomes. The programs are Cree Way in Quebec, Canada, Hualapai in Arizona, Te Kohanga Reo (Maori) in New Zealand, and Punana Leo (Hawaiian) in Hawaii. These programs were chosen for four characteristics: the languages are no longer transmitted to the younger generation (in the home or community); the programs all have curriculum development, community support, parent involvement, and government support; the programs exist in different countries; and they are recommended as model programs for endangered indigenous languages. Each program's description covers historical background; program development; funding; parent, community, and academic involvement; and current status. Each program has a curriculum that combines indigenous language and cultural heritage, literacy, community involvement, and parent participation. Common problems are related to teacher availability, teacher training, lack of written materials, and funding. Outcomes of all programs have included decreased dropout rates, increased sense of heritage and identity, and improved test scores. It is concluded that the success of these types of programs depends on home and community initiative and involvement; culture cannot be separated from the language. It is also important to begin the program at an early age, preferably preschool; to have a firm theoretical foundation; and to have written teaching materials. (Contains 29 references.)

*Stokes, S.M. (1997). Curriculum for Native American students: Using Native American values. *Reading Teacher, 50*(7), 576–584.

The Menominee Indian School District in Wisconsin has developed a curriculum for Native American students based on the values of the Native American community. Themes that would appeal to the children and that would reflect the concerns of the tribe were developed to guide the curriculum. The themes planned by the teachers were based on Native American values and explicitly called for tribal members' and parents' participation. The results are a new curriculum that is more reflective of Native American learning styles, a faculty that has taken ownership of the curriculum, parent and community involvement, and a commitment to excellence in curriculum and instruction by the district's administrators.

*Swisher, K. (1990). Cooperative learning and the education of American Indian/Alaska Native students: A review of the literature and suggestions for implementation. *Journal of American Indian Education, 29*(2), 36–43.

This is a review of the literature as it relates to American Indian students on cooperative learning, competition, learning styles, teacher-student interactional styles, peer influence, and the effects of cooperative versus competitive learning on academic achievement. Discusses Student Team Learning techniques. (Contains 31 references.)

*Swisher, K., & Deyhle, D. (1989). The styles of learning are different, but the teaching is just the same: Suggestions for teachers of American Indian youth [Special issue on Native American learning styles]. *Journal of American Indian Education,* 1–4.

The paper examines learning style and interactional style differences of American Indian and Alaska Native students. It provides specific classroom examples and research findings concerning culturally influenced learning styles, the visual approach to learning, field dependence, public versus private demonstration of learning, and cooperation versus competition in the classroom. (Contains 46 references.)

Swisher, K., & Hoisch, M. (1992). Dropping out among Native Americans and Alaska Natives: A review of studies. *Journal of American Indian Education, 31*(2), 3023.

This article combines the literature discussed in two different studies, and presents it as a unified review of the literature. One of the studies was titled "American Indian/Alaska Native dropout study-1991" and examined the data available on the nationwide dropout rate for AN/AI students. The study began in 1989 with a grant from the National Education Association. The goal was to gather information about students who attended three different systems: public, private, and BIA schools.

However, the data from BIA offices and tribal entities was often incomplete and difficult to obtain, and the study was forced to focus on data collected from 26 states. Unfortunately, the state education agencies computed dropout rates using different and sometimes incomparable methods. Therefore it was impossible to combine them to compute an accurate national dropout rate for AI/AN students. Largely because of the inability to collect data for the BIA schools a second study took place in 1991 that focused specifically on dropouts within the BIA school system. This study was sponsored by the Office of Indian Education Programs (OIEP), and requested enrollment and dropout statistics from each of the schools in the BIA system, both by mail and by telephone. The results found a dropout rate of 2 percent in grades nine through 12. Some of the factors cited by school personnel that contributed to the student dropout condition included lack of parental monitoring, low student commitment, low student aspirations, poor study skills, and substance abuse, among others. It must be noted, however, that only 120 out of the 166 schools in the BIA system responded to the survey. This makes it difficult to consider the results completely representative of the entire system. In addition, time constraints kept the research team from verifying the data received from the schools.

Taggart, S.W. (2001). Facilitating Native American high school success: Learning from the graduates (Doctoral dissertation, Brigham Young University, 2000.) *Dissertation Abstracts International, 61*(10), 3862.

The high school dropout rate among Native American students is a concern for many educators, parents, and tribal leaders. While many studies have approached this problem from the perspective of the dropout, this study looked at high school graduates in order to identify the characteristics, conditions, experiences, and relationships that contributed to their success. Native American high school graduates attending Dineacute College in Tsaile, Arizona, and Brigham Young University in Provo, Utah, participated in this study. Self-reports about the students' background and experience were obtained by means of a questionnaire and interview. Influences, both within and outside the school, were studied. A combination of influences contributed to the success of these students. Supportive and caring families were a critical influence and were mentioned most often, followed closely by religion or spirituality. Connections with and encouragement from other adults and youth, both in and out of school, also had a strong impact. Students spoke repeatedly of people who were always there for them when they needed help and encouragement. Parents were the most important family influence, followed by grandparents, uncles and aunts, and siblings. The parents of the top students set limits for them. They also established higher standards of behavior than those of their teenager's less academically successful peers. Parental involvement, example, expectations, positive messages, and family stories were also important. Teachers were clearly the most significant influence within the school. The most respected teachers made class understandable, interesting, exciting, and fun; cared about and connected with their students on an individual level; and were available to help with school work, talk to, and mentor students. They also gave encouragement, had high expectations, and pushed students to do well. Among the students' personal characteristics were a positive sense of self, productive use of time, commitment to doing homework, resilience in facing adversity and negative circumstances, an achievement orientation, people skills, a desire to learn, a positive outlook, and spiritual values. When asked what contributed the most to their success in high school, parents and family were mentioned most often, followed by religion or spirituality, personal characteristics, and school influences.

^Taylor, L. (1997). Integrating mathematics and American Indian cultures. In J. Trentacosta & M. Kenney (Eds.), *1997 Yearbook. Multicultural and gender equity in the mathematics classroom: The gift of diversity* (pp. 169–176). Reston, VA: National Council of Teachers of Mathematics.

This is part of the National Council of Teachers of Mathematics' 1997 yearbook on multicultural and gender equity in the math classroom. The writer presents information about planning integrated lessons and outlines several culturally connected activities that can make math more appealing to Native American students. The activities are noncompetitive and cooperative, which may explain their successful use with Native American students.

*Temp, G.E. (1974). *Final evaluation report for Alaska Native Education Board, Inc., 1973–74. First year of the bilingual/bicultural program.* Anchorage, AK: Alaska Native Education Board. (ERIC Document Reproduction Service No. ED094580)

The ANEB bilingual/bicultural programs were in operation in eight rural communities in Alaska in 1973–1974. This evaluation is based on the results of interviews with members of the community, staff, and student body. The information collected was in four areas: fall 1973 student pretest information; spring 1974 student posttest information; winter-spring 1974 community reactions; and spring 1974 staff reactions. The questions presented to the students tested their knowledge of present and past Native cultures. The results demonstrated a marked increase in knowledge of historical culture due to the instruction of the bilingual/bicultural programs; their knowledge of the present Native culture was already high. In regard to reading and speaking skills in Native languages, 68 percent of the children were able to read some of the Native language materials by spring 1974, but there is still room for movement toward equal Native/English-speaking ability. Virtually all the students involved were enthusiastic about the programs. In addition, wide community support of the programs was shown from a random sampling of members of the community. Finally, 14 of 16 staff members questioned wanted the program to continue.

Tharp, R.G. (1997). *From at-risk to excellence: Research, theory, and principles for practice.* Santa Cruz, CA: Center for Research on Education, Diversity and Excellence. (ERIC Document Reproduction Service No. ED409717)

The report describes the Center for Education, Diversity, and Excellence (CREDE), a national research and development center operated cooperatively by the University of California, Santa Cruz, and the Department of Education's Office of Educational

Research and Improvement, National Institute on the Education of At-Risk Students. CREDE's premises, mission, principles, theory, and research design are outlined, and the scope, range, and scale of its activities are noted. CREDE was established to assist the nation's diverse students at risk of educational failure to achieve academic excellence. The Center works to move issues of risk, diversity, and excellence to the forefront of discussions concerning educational research, policy, and practice. Central to its mission are issues in the education of linguistic and cultural minority students and those placed at risk by race, poverty, and geographic location. An appendix provides briefs of each of the 30 CREDE projects in six areas: language learning and academic achievement; professional development; family, peers, schools, and community; instruction in context; integrated reform; and assessment. A second appendix lists the organizational and institutional partners in CREDE projects.

*Tharp, R.G., & Yamauchi, L.A. (1994). *Effective instructional conversation in Native American classrooms.* [Educational practice report: 10.] Santa Cruz, CA: National Center for Research on Cultural Diversity and Second Language Learning. (ERIC Document Reproduction Service No. ED372896)

Instructional conversation (IC) is a dialogue between teacher and learner in which prior knowledge and experiences are woven together with new material to build higher understanding. IC contrasts with the highly routinized and teacher-dominated "recitation script" of traditional Western schooling. IC varies in form in different cultures, as do other discourse forms. Analysis of research on the formal and informal learning of Native Americans (including Native Hawaiians) indicates that successful Native American ICs are influenced by at least four basic psychocultural factors: sociolinguistics (teacher and student expectations about conversational "wait time," participation structure, tempo, loudness, and nonverbal behavior); cognition (Native American emphasis on the visual/holistic approach); student motivation (enhanced by the use of culturally relevant curriculum materials and by teacher respect for student autonomy); and social organization (Native American emphasis on small peer-oriented work groups). The evidence suggests that the nature of classroom activity settings influences the participation and engagement of American Indian and Alaska Native students in these activities. "Ideal" Native American activity settings embed ICs in the social context of small student-directed units engaged in joint productive activity that contextualizes formal knowledge in the immediate experience and concerns of the learners. This report contains 74 references.

*Travis, M. (1979). *Significant impact of environment regarding eligibility of Native American and Alaska Native students for ESEA Title VII regulations.* Juneau, AK: Alaska State Department of Education. (ERIC Document Reproduction Service No. ED195362)

Early Russian religious and educational influences on the 20 various Alaska Native languages are described, followed by those of American origin in schools and religious groups after the American purchase in 1867, all of which show the development of diglossia and language shifts. The present dual educational system, which includes state schools and Bureau of Indian Affairs (BIA) schools, has contributed to shifts in language use from Alaska Native languages to varieties of English or combinations of both. Alaska Native and non-Native students learn Native language–specific dialects of English, which have their own phonological and syntactical characteristics. Teacher attitudes, knowledge, and understanding, as well as differences in culture-specific modes of discourse, and the use of formalized textbook English are seen as factors that create interethnic communication problems. The geographic and cultural isolation has also been influential in creating a lack of language proficiency and educational achievement. Recommendations for student eligibility for the bilingual program in ESEA Title VII include identification of limited English proficient students by teacher recommendations and testing; documentation of community language and cultural influences by languages other than English; and description of historical community cultural contribution to the limited English proficiency of target students.

*U.S. Bureau of Indian Affairs. (1976). *Young Native Americans and their families: Educational needs assessment and recommendations.* Washington, DC: Author. (ERIC Document Reproduction Service No. ED127021)

This report presents findings and recommendations based on a detailed assessment of the educational needs of young Native American children and their families. The project had three major objectives: to conduct an assessment of the educational needs of Native American children (prenatal to age eight) and their families; to describe and report on the types of programs currently available to these children and their families; and on the basis of the assessment of needs, and in the context of programs available, to draw conclusions and make specific recommendations for programs that will have the maximum potential for meeting the identified developmental and educational needs. Discussed are economic conditions; health and nutrition; social problems and issues; emotional problems and mental health issues; early development and education; school learning and intellectual development; education for Indian and Eskimo children, bilingual programs; and program recommendations. Appendices include an evaluation of two parent-child development programs, detailed cost estimates, and interview guides and data sheets for classroom and school visits.

*Vadas, R.E. (1995). Assessing the relationship between academic performance and attachment to Navajo culture. *Journal of Navajo Education, 12*(2), 16–25.

A survey of 185 Navajo students in grades seven and 11 examined the relationship between their identification with attributes of traditional Navajo culture and their achievement level on standardized tests. Results suggest that student identification with Navajo language, culture, and tradition helps develop student self-esteem and cultural identity in ways that promote academic success. (Contains 47 references.)

Ward, C. (1998). Community resources and school performance: The Northern Cheyenne case. *Sociological Inquiry, 68*(1), 83–113.

This paper analyzes quantitative educational and demographic data on 296 American Indian students enrolled in the 1987–1989 classes of three high schools serving the Northern Cheyenne reservation in southeastern Montana and qualitative interviews with students, teachers, and parents to investigate influences on school performance, which is operationalized as grade point average. Community factors (e.g., size, socioeconomic heterogeneity, social support, and number of native-language speakers) are found to be important predictors of performance at both the tribally controlled and Catholic Indian schools, while school experiences (e.g., transfers, absences, and extracurricular participation) are more significant for explaining grades at the non-Indian public school. Family variables and gender also correlate with performance. Contrary to conventional analyses of American Indian assimilation, findings suggest that traditional culture, reservation social resources, and community interaction patterns can have positive effects on student performance. Three tables, one figure, 54 references. Adapted from the source document.

Warschauer, M. (1998). Technology and indigenous language revitalization: Analyzing the experience of Hawai'i. *Canadian Modern Language Review, 55*(1), 139–159.

This paper reports two years of ethnographic research on efforts to use online technologies in Hawaiian language revitalization programs. Issues discussed include the Internet's role in promoting or hindering language diversity, relationship of multimedia computing to non-Western patterns of civilization, Internet use for exploring cultural and social identity. Results are examined in the context of a critical theory of technology.

*Watahomigie, L.J. (1995). The power of American Indian parents and communities. *Bilingual Research Journal, 19*(1), 189–194.

This paper discusses the role that schools, communities, and parents can play in transmitting American Indian culture and language to Indian children, focusing on the experiences of the Hualapai Indians and Peach Springs School District in Arizona.

*Watahomigie, L.J., & McCarty, T.L. (1994). Bilingual/bicultural education at Peach Springs: A Hualapai way of schooling. *Peabody Journal of Education, 69*(2), 26–42.

The Hualapai (Arizona) Bilingual/Bicultural Program is nationally recognized for its achievements in Native language literacy and bilingual/bicultural curriculum development. The article presents information on how the program evolved, the role of indigenous educators, community involvement, and biliteracy education in a community with a previously unwritten language.

*Watson-Gegeo, K.A. (1989). *The Hawaiian language immersion program: Classroom discourse and children's development of communicative competence.* Paper presented at the annual meeting of the National Council of Teachers of English, Baltimore, MD. (ERIC Document Reproduction Service No. ED321561)

In its first year, the Hawaiian Language Immersion Program combined kindergarten and first-grade students in two classes. About half the students had no speaking knowledge of Hawaiian; the remainder had attended Hawaiian-language preschools and/or spoke Hawaiian at home. Both teachers, fluent speakers of Hawaiian, were new to teaching. The teachers spoke only Hawaiian after the first two days of school, and students were reminded to speak in Hawaiian. By spring, lapses into English or pidgin became infrequent. Visiting parents were impressed with the warm relationships evident between children and teachers. Classroom organization combined adaptation to Hawaiian values and cultural practices with practices common to other elementary classrooms. While occasionally correcting students' Hawaiian, teachers more commonly modeled correct form or set up repeating routines to support student learning. Teachers treated students as true conversational partners, focusing primarily on content comprehension, with brief but significant instructional sequences inserted. Language learning in peer-peer interactions was encouraged. The students were found to take their work seriously, and were on task a high proportion of the time.

*West, D.K. (1988). Comparisons of career maturity and its relationship with academic performance. *Journal of American Indian Education, 27*(3), 1–7. (EJ382740)

This paper examines career maturity and academic achievement between 30 American Indian and 39 non-Indian college students. Finds strong positive correlations between grade point average and career maturity for freshman and sophomore Indians and freshman non-Indians, but not for the total sample or either ethnic group overall. (Contains 19 references.)

Westby, C., & Roman, R. (1995). Finding the balance: Learning to live in two worlds. *Topics in Language Disorders, 15*(4), 68–88.

This paper describes the educational experiences of Native Americans and discusses the principles of culturally compatible education, an educational approach in which patterns of interaction and communication in the classroom are compatible with students' cultural and home patterns. Four principles of education for diverse cultures are identified, including the use of instructional conversation (IC) as the basic form of teaching through student-teacher dialog. A narrative development pilot program that used IC to assist six Native American third- and fourth-grade children from a traditional pueblo culture in learning the mainstream language style is presented. The program used videotapes centered around an animal figure, Max the mouse, and related books of traditional Native American stories. Cultural considerations in beginning and implementing the program and the nature of storytelling in Native American cultures are discussed.

Westcott, J.R. (1975). The effects of the Distar reading program on selected disadvantaged children of South Dakota (Doctoral dissertation, University of South Dakota, 1974). *Dissertation Abstracts International, 35*(11), 6954.

The purpose of this study was to determine the effect of the Distar reading program on the reading achievement of fifth-grade students in three schools on the Rosebud Reservation in South Dakota. Distar programs were developed to help overcome some of the problems of disadvantaged children. The program is a highly structured one, designed to compensate for the language and reading problems of these children. Several tests were used to determine the effectiveness of the Distar reading program, including a diagnostic reading test, a reading comprehension test, and a self-concept test. The results showed that pupils in a larger mixed-population center exhibited greater reading comprehension and a larger vocabulary than pupils in more remote Indian communities, whether they learned to read in the Distar program or not; Distar pupils in a larger community also showed a greater facility in syllabication than the Distar pupils in the smaller Indian communities; Distar pupils showed less reading comprehension, a smaller vocabulary, and poorer sound discrimination than non-Distar pupils; and there was a positive correlation between reading achievement and self-concept for all pupils in all schools.

^Whitbeck, L.B., Hoyt, D.R., Stubben, J.D., & LaFromboise, T. (2001). Traditional culture and academic success among American Indian children in the upper Midwest. *Journal of American Indian Education, 40*(2), 49–60.

This study examined factors affecting school success for 196 American Indian children in grades five through eight. The degree to which children were embedded in traditional culture positively affected student academic performance, even when controlling for such variables as family characteristics, parenting, and prosocial activities. Effects of enculturation were independent of self-esteem.

Whitfield, P.T., & Klug, B.J. (1998). *Nurturing the seventh generation: A three-year ethnographic study of Native Americans who would be teachers.* Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA. (ERIC Document Reproduction Service No. ED422141)

The Knight Scholars Program--a collaborative project between Heritage College (Washington), three local school districts, and one tribal school--aimed to increase the number of Native American teachers in Washington. The project sought to develop programs to facilitate the teacher preparation of Native American instructional aides and to assist candidates in understanding and addressing the special problems faced by Native American students in K–12 settings. This paper examines factors that contributed to the academic and professional success or failure of 17 Native American teacher-aspirants (Knight Scholars) selected from paraprofessionals in four cooperating school districts. These individuals represented varying degrees of acculturation (traditional, acculturated, and bicultural), and 90 percent were low-income. Primary project strategies included: integrating opportunities for education majors to investigate the impact of multigenerational trauma on themselves and their students; developing opportunities for project participants to put theory into practice in field-based classrooms; and assisting in the development of educational planning, school/college partnerships, culturally appropriate educational programs, emphases on tribal language and culture in schooling, and college offerings to facilitate the foregoing components. Semi-structured interviews with the 17 Knight Scholars, as well as a three-year ethnographic study of the program, indicate that participants integrated two world views and recognized their need for Western education to become effective teachers, were proud of their own and the program's success, reported growth in self-confidence and professional competence, and saw themselves as role models and mentors for Indian youth.

Wiest, P.E. (2000). Stories of academic achievement: Case studies of successful Native American students (Doctoral dissertation, Arizona State University, 1999). *Dissertation Abstracts International, 60*(07), 2409.

This qualitative study was undertaken to determine which factors influenced Native American students to go on to college after high school to obtain a Bachelor's or higher degree, and which factors played a role in keeping these students in college. In order to accomplish this, 15 Native American students were interviewed and the results were recorded and analyzed. The respondents' experiences were categorized into four main influential factors: family values/influences, institutional support/programs, financial support, and culture and community. From these data, recommendations were made as to how resources may be better allocated to assist future Native American students in their quest to obtain a college education.

*Willeto, A.A.A. (1999). Navajo culture and family influences on academic success: Traditionalism is not a significant predictor of achievement among young Navajos. *Journal of American Indian Education, 38*(2), 1–24.

This study of 451 Navajo youths attending 11 high schools in the Navajo Nation found no relationship between their academic achievement and their cultural attachments and practices. Families modestly influenced educational outcomes, but being female was a stronger predictor of academic success. An Appendix describes study variables. (Contains 42 references.)

*Williams, E., Radin, N., & Coggins, K. (1996). Paternal involvement in childrearing and the school performance of Ojibwa children: An exploratory study. *Merrill-Palmer Quarterly, 42*(4), 578–595.

This study examined Ojibwa families for relationship between quantity and quality of father involvement in child rearing and children's academic and social performance. Found that more time spent by fathers was associated with better academics and social development for boys, while greater nurturance was associated with poorer academic performance. Found that participation of father's father was an antecedent of involvement.

*Wilson, J.G. (1983). *Wisconsin Indian opinions of factors which contribute to the completion of college degrees* (WCER Program Rep. No. 83-13). Madison, WI:

Wisconsin Center for Education Research, Madison. (ERIC Document Reproduction Service No. ED237274)

Opinionnaires were mailed to 860 Wisconsin Indian college students and graduates, 189 of whom were also interviewed, to identify positive factors contributing to completion of college degrees by Wisconsin Indian people. The opinionnaire used for current students and those graduated from 1977 to 1982 differed from that used with pre-1977 graduates; the latter provided more open-ended questions. Usable opinionnaires (214) were 27.8 percent of those distributed. Financial aid ranked first as a factor contributing to college completion, followed by family support, having a personal goal, determination, and intelligence. Seven composite profiles of Wisconsin Indians who completed college degrees, derived from the opinionnaires and interviews, showed a number of commonalities: a parent or parents who understood the value of a college education, no perception of discrimination before the high school level, discovery that college was more difficult than high school and less personal, pride in being Indian, and sense of purpose. Detailed recommendations from opinionnaire respondents discussed six sources that could encourage Indian students: parents, pre-college schools, tribes, colleges and universities, students themselves, and older Indian college students. A specific recommendation called for a statewide conference on Indian education, followed by practical on-site workshops to help implement the study's recommendations. Appendices include opinionnaires, maps, and supporting letters.

*Wilson, P. (1997). Key factors in the performance and achievement of minority students at the University of Alaska-Fairbanks. *American Indian Quarterly, 21*(3), 535–544.

Realization of high failure rates among Native students sparked a study of professor/student relationships at the University of Alaska-Fairbanks. On the Personal Learning Styles Inventory, minority (Native and Hispanic) students scored highest on active experimentation and concrete experience. Indigenous students also rated professor accessibility, approachability, availability, genuineness, and caring as necessary for learning success. (Contains 22 references.)

Wolfe, J.N., Schwartz, N.H., & Petersen, J.D. (1996). Comparison of Hualapai school children to national norms on measures of receptive vocabulary and verbal ability. *Psychology in the Schools, 33*(3), 245–250.

This study investigated performance differences on receptive English language ability and general verbal reasoning ability among 204 Hualapai Indian K–eighth graders (aged five years three months to 15 years seven months). Students were administered the Peabody Picture Vocabulary Test--Revised (PPVT--R) and the Verbal portion of the Cognitive Abilities Test, Form 4, and their performance was compared at each grade level to the national norms for these measures. Results indicate that Hualapai children scored significantly lower on both measures of verbal ability when compared to national samples. Results also provide a long-needed archival record of the English language proficiency of the Hualapai, and support the notion of homogeneity of

English language facility across American Indian tribes. Contributing factors to Hualapai and other Native American populations' weaker performance on measures of verbal ability are discussed.

*Wright, S.C., & Taylor, D.M. (1995). Identity and the language of the classroom: Investigating the impact of heritage versus second language instruction on personal and collective self-esteem. *Journal of Educational Psychology, 87*(2), 241–252.

The connection between heritage language instruction and self-esteem was investigated for 64 Inuit, 13 white, and 36 mixed-heritage children. Children educated in their heritage language showed an increase in self-esteem after one year, but Inuit and mixed-heritage children educated in a second language did not.

Wright, S.C., Taylor, D.M., & Macarthur, J. (2000). Subtractive bilingualism and the survival of the Inuit language: Heritage- versus second-language education. *Journal of Educational Psychology, 92*(1), 63–84.

This longitudinal study examined the impact of early heritage- and second-language education on heritage- and second-language development among Inuit, white, and mixed-heritage (Inuit/White) children. Children in an Arctic community were tested in English, French, and Inuttitut at the beginning and end of each of the first three school years. Compared with Inuit in heritage language and mixed-heritage children in a second language, Inuit in second-language classes (English or French) showed poorer heritage language skills and poorer second-language acquisition. Conversely, Inuit children in Inuttitut classes showed heritage language skills equal to or better than mixed-heritage children and whites educated in their heritage languages. Findings support claims that early instruction exclusively in a societally dominant language can lead to subtractive bilingualism among minority-language children, and that heritage language education may reduce this subtractive process.

*Wright, S.C., Taylor, D.M., Ruggeiro, K.M., MacArthur, J., & Elijassiapik, M. (1996). *The Jaanimmarik school language-testing project.* Montreal, Quebec, Canada: Kativik School Board.

In the fall of 1989, Jaanimmarik School in northern Quebec began offering kindergarten classes in Inuttitut, English, and French. This document contains three reports of participant testing in grades K–2. Examining the Potential for Academic Achievement: An Analysis of the Children's Performance on the Raven Colored Progressive Matrices Test shows that Inuit and mixed-heritage children's intellectual potential or "analytic intelligence" was superior to that of U.S. children in general, as well as African American, Mexican American, and Navajo children. Identity and Language of Instruction: The Effects of Heritage Language versus Second Language Instruction on Personal Self-Esteem and Collective Self-Esteem found that all kindergarten children at the school--Inuit, white, and mixed-heritage--had high personal self-esteem. Self-esteem increased for all students who went to kindergarten in their heritage language, but did not increase for Inuit children who went to kindergarten in English or French. Heritage Language Maintenance and Second Language Learning: Early Inuttitut Instruction and Additive or Subtractive Bilingualism in Nunavik reveals that by grade two, Inuit children in the Inuttitut program had developed strong academic and conversational skills in their heritage language, those in the English and French programs had not developed strong academic skills in any language, and those in the English program were beginning to show signs of subtractive bilingualism. Among mixed-heritage children, those educated in English did well in English but developed little skill in the other languages, while those educated in Inuttitut developed Native-like ability in Inuttitut and maintained strong conversational ability and some academic ability in English.

*Yagi, K. (1985). *Indian Education Act project in the Portland public schools. 1984-85 evaluation report.* Portland, OR: Portland Public Schools. Evaluation Department. (ERIC Document Reproduction Service No. ED268168)

The Portland Indian Education Act Project (IEAP), completing its 11th year, serves American Indian students from preschool through high school. Eligibility for services is established according to federal guidelines. Objectives set for the project concentrate on increasing academic achievement and school attendance, and reducing early school attrition. The main activities are tutoring/counseling, attendance monitoring, cultural education, and hardship assistance. Data are collected and maintained to evaluate the project's progress annually, as well as longitudinally. This evaluation report is divided into four major sections: introduction, program description, evaluation of objectives, and comments and conclusions. The plan used in the evaluation of objectives consists of evaluation questions related to each of the three objectives. District statistical data compiled over five years shows a decline in attrition while also showing an increase in attendance and achievement among American Indian students. Efforts of the IEAP staff emphasize significant use of resources, sometimes community resources, in these areas. Data accumulated and compiled for IEAP evaluation purposes continue to show educational needs for American Indian students in Portland. Funding restrictions pose a threat to program quality and make it increasingly more difficult for the project to design and implement a comprehensive program.

*Yamauchi, L.A., & Ceppi, A.K. (1998). A review of indigenous language immersion programs and a focus on Hawaii. *Equity & Excellence in Education, 31*(1), 11–20.

This paper reviews American educational policy and indigenous language loss, the importance of language revitalization, and various models of language-immersion studies. A case study reports on Papahana Kaiapuni, the Hawaiian language immersion program established in 1987. This program is an example of a Native community's efforts to revitalize its language.

*Yamauchi, L.A., Ceppi, A.K., & Lau-Smith, J. (2000). Teaching in a Hawaiian context: Educator perspectives on the Hawaiian language immersion program. *Bilingual Research Journal, 24*(4), 333–351.

Papahana Kaiapuni is the nation's only K–12 program taught entirely in Hawaiian. Focus groups and interviews with 37 teachers and four principals examined their roles and experiences in the program. Teachers integrated Hawaiian culture into the curriculum and viewed the program as a model of school reform for Native Hawaiians. The program also transformed many teachers' views of themselves as teachers and as members of the Hawaiian community.

Yamauchi, L.A., & Greene, W.L. (1997). *Culture, gender, and the development of perceived academic self-efficacy among Hawaiian adolescents.* Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL. (ERIC Document Reproduction Service No. ED409509)

Social cognitive theory suggests that individuals' beliefs about their efficacy in specific contexts such as school influence their motivation in those settings. The relationship between various sociocultural factors and the development of adolescents' perceived academic self-efficacy are investigated in this paper. Participants (N = 202), drawn from grades seven and 10 at a rural secondary school in an island community, completed several measures of self-efficacy. Students also answered open-ended questions about grades in school, career expectations, and how they thought they were viewed by parents, peers, and teachers. The students' responses were compared to those of mainland students and analysis suggested that the island students reported lower perceived self-efficacy for academic achievement in all academic domains except biology. This exception could be explained by the fact that the students' rural island lifestyle made them more familiar and thus more comfortable with plants and animals. Results indicate that being male and being a native islander was associated with lower self-efficacy for self-regulated learning. It is suggested that the sociocultural context provides different information to native boys and girls regarding their performances at home and at school.

* Original bibliography
# Experimental research design
^ Added after 12/30/02

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